October, 1990 $3.95

BOARDWATCH MAGAZINE

Electronic BBS and Online Information Services

Brian Miller and Tess Heder of Cambridge Massachusetts
CHANNEL 1 BBS - 45 Telephone Lines and Growing

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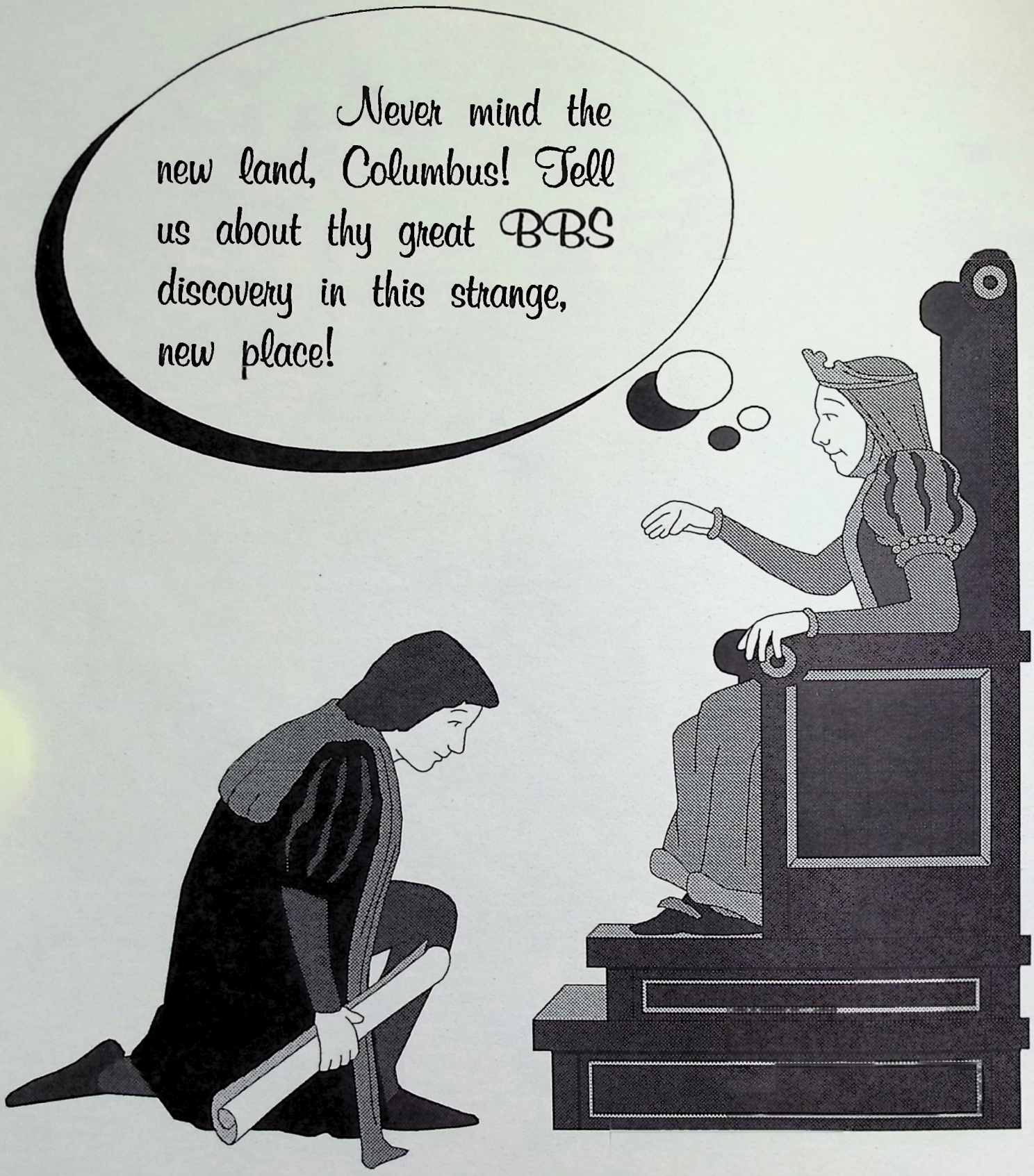

The Executive Network
Information System

(914) 667-4567

[8 Data bits, No parity, 1 Stop bit, Full duplex]

BOARDWATCH MAGAZINE

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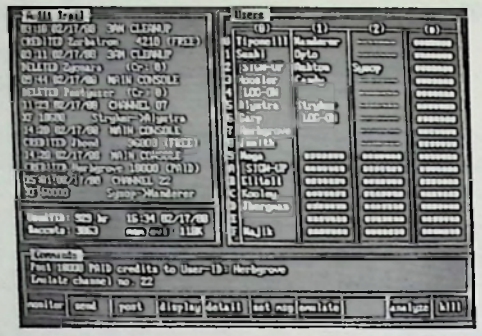
- Boardwatch Magazine -

Which Multi-User BBS Is Best?

The top five DOS-based multi-user Bulletin Board Systems on the market are The Major BBS, TBBS, PC Board, DLX, and WILDCAT! Which one is for you? Here are some facts to help you decide.

All of these BBS designs offer E-Mail, file upload/download, teleconferencing, security controlled access to various configurable message and file bases, and so on. Each comes with professional documentation, telephone support, and a set of easy-to-use configuration and maintenance utilities.



The Major BBS: multi-user E-Mail, file upload & download, teleconferencing, message bases, plus!

The Major BBS, TBBS, and DLX all support multiple simultaneous users on a single desktop computer running standard MS-DOS version 3.0 or higher. PC Board and WILDCAT! require a separate computer for each user, with the computers connected together via LAN, unless you plan to use a DOS-overlay multi-tasking executive such as DESQview or DoubleDOS.

As of this writing, The Major BBS can support up to 64 simultaneous users, TBBS can support up to 32, and DLX can support up to 24. In each case, specialized multi-port hardware is needed to support 6 or more users, but standard COM ports can be used for smaller systems. The Major BBS is the only one that can support 4 standard internal COM1, COM2, COM3, and COM4 modem or serial cards simultaneously. The others allow you to use two out of these four, but to use more than two COM ports they require that you buy multi-port cards.

The Major BBS is also the only one with source code available. If TBBS, DLX, PC Board, or WILDCAT! do not do what you want, you cannot modify their source code to make them do it. The C source to The Major BBS is compatible with both Turbo C and Microsoft C. It is clean and well-documented. Steve Gibson calls our source code "a software system of uncommon beauty and grace" (*INFO WORLD*, 7/31/89).

WILDCAT! and PC Board offer "doors", which permit the Sysop to add large amounts of software developed by third parties. The Major BBS, TBBS, and DLX do not offer "doors", but The Major BBS permits the integration of hundreds of add-on software products developed by third parties, at the C source code level. Add-on products available include databases, marketing tools, multi-player adventure games, dial-out utilities, and more.

The Major BBS is the only one to support true protected mode operation. The other leading BBS's are strictly real mode products, so they are limited by the one-megabyte address space native to the 8088. "Expanded" memory (EMS) is an awkward way of getting around this 8088 limitation. With The Major BBS source and the Eclipse/Ergo DOS extender, you can address up to 15 megabytes of true "extended" memory on a 286, 386, or 486—without changing operating systems.

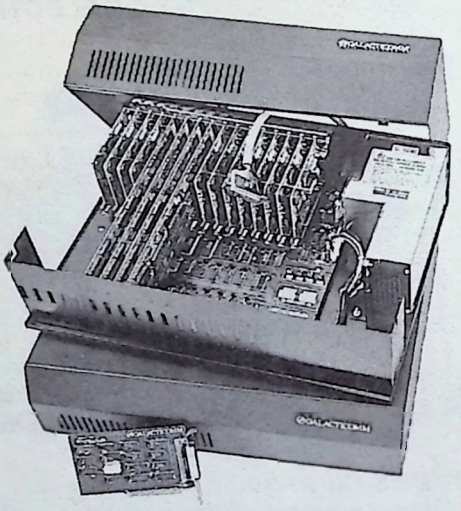
The Major BBS is the only one of the leading five to offer optional X.25 direct-connect to packet-switch networks. The others can be connected to an X.25 network through a PAD, which typically costs over $1000 per month in leasing charges, or via LAN gateways. The Major BBS with the X.25 software option talks directly to the PC XNet adapter from OST, Inc. This both improves performance and dramatically reduces cost.

Galacticomm is also unique among the five main BBS vendors in that we have solved the hardware problem of interfacing more than 32 ports to one computer. The Major BBS works both with standard COMx serial ports and modems, and with our high-capacity hardware. You can use any standard PC, XT, AT, 386, or 486 with any of our hardware products. The rising star of our hardware lineup is the GalactiBox, a 16-slot chassis which can be populated with standard 8-bit serial or modem cards at rates up to 38400 bps, to create systems that will be state-of-the-art well into the 21st century.

The Major BBS is the system you saw on the cover of the March 1990 issue of *Personal Computing*, with the caption "This Man Saved His Department $100,000". If you have dialed into the Tech Support BBS lines at Ashton Tate, AST Research, Central Point Software, or Natural Microsystems, you have used The Major BBS. Our customers include the U.S. Army, Navy, and Air Force, ten major universities, and computer industry giants such as Epson America, Autodesk, and UNISYS.

We offer inexpensive, flexible, expandable software starting at $59 for a 2-line Standard Edition. You can double the number of lines (simultaneous users) supported from that point, to 4, 8, 16, 32, or 64, for a flat $300 per doubling. The C source license to the Standard Edition is a flat $285 extra, independent of line count. Four extended editions are available: the File Library Edition (add $199 for executable license, add another $159 for the C source extensions), the Shopping Mall Edition ($249/$189), the Entertainment Edition ($149/$129), and the MenuMan Edition ($149/$129). Call for prices on hardware, the X.25 software option, our annual update service, and protected-mode toolkits.

Please call 305-583-7808 with your modem (8-N-1) for a sample of what we offer. Or, call our sister company Galactic Innovations (BBS #305-321-2410, 8-N-1) for a look at some of the add-on software available, including The Major Database and several multi-player real-time games.



The GalactiBox: 16 slots for standard AT-bus cards such as serial ports, fax, voice I/O, and modems

To order your $59 starter kit, just give us a voice call at 305-583-5990!

EDITOR'S NOTES

THE BIG, THE BAD, AND THE BANKRUPT

This issue brings us ruefully to the task of reporting the demise of two large, popular, and in most all respects excellent BBS systems. Jud Newell's Canada Remote Systems went into default during the second week of August leaving some 8,000 subscribers, and a number of vendors, including ourselves, holding the bag. Canada Remote Systems was one of the largest PCBoard installations in the world with 50+ lines and widely recognized as the largest BBS in the classical sense operating in Canada. We reviewed Boston CitiNet, a free, advertising supported community system during the summer of 1987. They were in operation six years and claimed a user base of some 40,000 when they dropped carrier this past July 23rd.

Neither system failed because of inadequate caller response. Both left behind large numbers of disappointedly faithful fans. But both were victims of heavy debt loads incurred while the operators were all a quiver over unusually rosy projections of future business. I personally refer to this as "Spreadsheet-itus" or just "Spreadshit" for short.

It works on the basis that today's modern spreadshit software programs are almost hypnotic in the things they can do with numbers. The devices can actually take you on a magic carpet ride entirely devoid of the elements of reality traditional yellow legal pad and pencil figuring bring to bear. It goes something like this. If you have one egg on Monday, and two eggs on Tuesday, and four eggs on Wednesday, you can project this out using a spreadsheet until you have eggs all over the place. The spreadsheet will draw graphs to the sky, project eggs, chickens, barns, tractors, etc. until on screen, you own Ohio, Indiana, and parts of Mississippi you may prefer to unload at the earliest opportunity. To adequately scramble all these eggs, you'll of course need the latest in industrial strength ovens, kitchen ware, and assorted pot holders. These of course cost money, not chicken feed.

Spreadshits are also incredibly convincing. If you tell someone you can build a pretty good business given a bit of capital, they may tell you've they've heard of such things - about thirty times this week. But if you show them a spreadshit with all these eggs, they seem to glaze over and start counting chickens along with you. Wanting not to be left out when you kill your future 300 pound chicken, too often they'll be happy to join in your venture financially for just a small piece of your soul.

Common sense would tell us that if you double your eggs each of three days running, you've just had three very good days. Chicken diseases, variable prices for chicken feed, and the fickleness in the market price for eggs make real egg farmers a pretty cautious, and generally prayerful lot. None of this shows up on the spreadshit software screen.

Jud Newell enjoyed some very heady and actually well deserved growth based on his ability to read and deliver a product of genuine service to a large number of Canadian modem enthusiasts. He borrowed quite a bit of money, hired a staff of three, ventured into the largely unrelated areas of hardware and software sales, and noted to us on more than one occasion that he was running a million dollar operation. As he succeeded, others entered the market and the increases in subscriber numbers may have leveled out a bit for him. During the usual and expected lull of the dog days of this past summer, he couldn't meet his debt load and a really good system is gone from our ranks as a result. At this point, it would appear it may be resurrected by one of his subscribers who intends to buy the service.

Boston CitiNet's demise is even more illustrative and similar in nature. CitiNet went off line July 23rd after six years online claiming 40,000 current users. They were totally free of charge to callers and supported by local Boston advertisers - primarily help-wanted and real estate ads. But NYNEX and a few other telephone companies wined and dined them, told them how pretty they were, and convinced them they could make the big bucks on the telco gateway services.

RBOC Gateways are a fascinating new experiment in online technology developed by the telephone companies. Essentially, they talk information providers into paying for the construction of an obsolete packet switched online service featuring garishly crude graphics screens nobody can use to do anything. Then they charge callers about $3.00 hourly to access services they could call locally at very modest annual subscriptions of $25 to $75, or in the case of Boston CitiNet, at no cost all. In turn, they give the information provider a cut of the charges. Somehow, for all of this "service" they manage to cut themselves in on a deal they comprehend but vaguely. And, if it doesn't work out for the telephone company, they simply close the service and leave the information provider hanging for his investment as Southwestern Bell did with their SOURCELINE service in Houston earlier this year. Just a tad over 300 information providers were left swinging in the Texas wind in that fiasco.

Yes, there are some hefty sign up fees and equipment investment to gain a packet connection to the gateways. But NYNEX persuaded Boston CitiNet cofounder Richard Koch that income from the Gateway would cover that investment in no time.

Koch admits they sunk "several hundred thousand dollars" into the gateway connection. And many of the callers,

conference moderators, and advertisers seem to feel he neglected the local Boston services while working on the gateway connections. By all accounts, the actual take from the gateway amounted to pennies. Donald Franklin, moderator of the Apple Computer and Christianity conferences on CitiNet, claims they gave him five cents per minute for connections into his area. His income from his experience with the online big time was a total princely sum of about $16.00. Note this too. By all accounts we can raise from everyone concerned, both technically and in approach, NYNEX seems to be the BEST of the gateway services in all respects.

CitiNet's local Boston advertisers had little interest in advertising local services in New York, Washington D.C., Vermont, or anywhere else outside of Boston. The local system was suffering from inattention by some accounts along with a fairly soft New England real estate and employment economy. And so another perfectly good service that had operated more or less profitably for six years is off our national select list of BBS. Richard Koch is now a "consultant" - the 90s euphemism for the chronically unemployed.

The lesson in all this should only have to repeat a few hundred more times before it sinks in. Paul Hawken in his book Growing a Business claims that the WORST thing that can happen to a new business is for them to have too much money to start with. If you have money, you spend it. If you spend it, you find you have to spend it again and it becomes an accepted cost of doing business - overhead - whether it was really required or not. With a certain level of overhead, a certain level of income is required to survive. If you have your choice between no money, no overhead, and a little income, and some money, some overhead, and still a little income, pick the former. As your income grows, you can always add money and overhead later to catch up if you feel you must.

For the immediate future, telephone companies, national newspaper publishers such as Knight Ridder and the Los Angeles Times, cannot and will not be successful in online services directly. They simply do not have a structure fluid and responsive enough to remain competitive and profitable when such a small percentage of the population uses modems and computers and when an army of 15,000 BBS operators are laying awake nights planning new and different services they can provide to those callers at $50 per year of unlimited access or in some cases at no charge at all. True, these large companies have the capital to do anything. But to do anything, they start out with a tremendous obligation in overhead. In fact, for such organizations, simply doing the STUDY to determine if they want to do anything represents what most BBS operators would consider an enormous investment.

The current crop of successful BBS operators have the power to implement system changes WITHIN THE WEEK if for some reason they can't do it the same day. We've dialed systems on a revisit to find that the operator had within the last 30 days changed the basic BBS software he was using, added four lines, and upgraded to 9600 bps modems. And when we talk to him voice, all he cares to discuss is what else he's going to change in the NEXT 30 days. They fund this out of caller subscriptions or in some cases out of their own rent money. Most operate on a shoestring. But they keep growing, they keep adding, they keep getting more callers. For a handful at the top of the pyramid, the cash flow from these subscriptions not only funds continued growth, but a comfortable living as well. Still, it remains very much a cottage industry and for the vast majority of systems - a break even prospect.

Someday, this industry will mature. It will be enormously profitable. Large systems will eat small systems and different groups will consolidate as has happened in maturing industries for a couple of thousand years. Maybe we WILL at some point have but seven regional BBS operating companies. But as quickly as things are developing currently in the technology, in the presentation, and even in the basic conventions of an online society existing nowhere and everywhere simultaneously, we don't see that happening for a long time yet to come. I don't even think the small operator has yet entered his days of wine and roses - much less seen them pass. This industry is for the foreseeable future a cottage industry. Large debts incurred to force growth before its proper time force the operator to cease innovation in favor of generating money to service that debt. It is true we see increasing numbers of profitable systems and some do seem to be gathering a lot of eggs. But if your goal in starting a public online service is to make lots of money and build a company in the traditional sense, you've missed the point.

The online world is evolving in fits and starts. The basic paradigm of an online community is not fully formed. Individuals do mass together socially online and many develop lasting relationships based on mutual interest, not mutual geography. But the basic rituals any society or group needs to mark birth, marriage, and yes death, are not well established in this virtual space housing these groups. Dave Hughes brought up a fascinating element during a recent address of Senior Net, an online network of modem enthusiasts in the 55 plus age bracket, in San Francisco: "How are you people going to hold funeral services when one among you passes on? Your only contact is online but strong relationships are formed."

Technically, we are a long way from the ultimate interface. Until systems become truly easy to use for those new to the online world, we will never get a significant percentage of the population online. The current gauntlet new users face just to make their first BBS call is just obscene.

So technically, socially, and in almost every aspect, we are at the dawn of an entire new way for human beings, an innately social animal anyway, to interact with unlimited numbers of other human beings unhampered by the conventional restrictions of space, time, and geography. There are unlimited new challenges to be addressed and we will see some absolutely fascinating new developments over the next few years. Many individuals operating online services will be able to do so more or less profitably. But as a rule, they will themselves be focused on an entirely different horizon - shaping an online community of the future.

A friend built as successful a BBS system as we've seen in operation entirely from cash flow generated by his system and a bit here and there out of his own pocket. He started with a single line BBS in an upstairs apartment bedroom

and today he and his wife live and work comfortably from it. It's no longer single line of course. And it's not in an apartment bedroom. He works for no one but his callers. There is no major debt hanging over his system to dictate what he can do and what he can't do. True, he doesn't really have a "staff" or anything that could be termed a "company" of anything other than himself, his wife, a dog, and a few like-minded cottage industry people he farms a little work out to now and again as the load dictates. As a company, he's small potatoes. But most of us would regard his lifestyle, personal income, and surroundings as enormously attractive and comfortable. He prudently deals with money quite well every day but what drives his operation is a vision of what the ideal BBS would look like, how it would operate, how callers would interact with it, what works online, and what doesn't. What is the nature of online activity and why do people REALLY do it? And to shamelessly quote him "It takes a more complex set of goals than making money, to make money from a BBS". We're going to guess he knows more about that than we do. Bob and Tracy Mahoney run 164 lines today on EXEC-PC. And they're all paid for.

The message here is, if you have a mission who's outcome, or even possible outcome, is deemed worthy by the world at large, the world at large will see that you have your crust of bread more or less as an afterthought. If your main purpose in life is to make money, go into banking. Dillinger et al: "That's where the money is."

The world is a bit of a tease. Whatever sought with the most enthusiasm, always seems the most elusive. There are people making good money from BBS systems. Isn't it ironic then, that most of them are trying to do something else entirely?

TELEBITS

NEW YORK TIMES CROSSWORD PUZZLE UPDATE

A few months ago we told a friend seeking an idea for a 900 service that an answer service for the New York Times Crossword puzzle would likely be a winner. As chance would have it, we ran across just such a 900 number a few days later and we published the number in a recent issue. Now, we see in Harry Newton's *TELECONNECT MAGAZINE* that a company named Dylan Communications in Chicago has put up an entire series of toll-free 800 numbers offering answers to puzzles in a number of newspapers. The *New York Times* number is **(800)762-3558** and is totally free of charge. The Dial-A-Clue service asks you to enter **1** for across or **2** for down and then enter your clue number. This requires a touch tone telephone of course. Obviously, the free nature of the service pretty much puts **900** numbers out of business. Who pays? After entering the clue number, you will hear a brief advertising message - ours was Sears Brand Central. It's not so lengthy as to be an irritant and if you just can't continue without the answer to 28 across, this is a resource.

INTEL - AMD WAR OVER 80386

Intel Corporation and Advanced Micro Devices Inc. are currently in court over rights to produce the popular **80386** microprocessor. The two firms inked a complex deal in 1986 giving AMD the right to produce Intel microprocessors. AMD did sell an **80286** chip but Intel has denied AMD the right to produce the popular **80386** microprocessor. Intel will sell **7.5 million 80386** microprocessors in 1990 at an average price of **$115** grossing **$863 million** on the product. AMD also seeks the right to manufacturer the **80287** math co-processor.

Meanwhile, it is widely held in the lore of microcomputers that the single chip microprocessor was invented by an Intel engineer named **Ted Hoff**. Apparently not so. On July 17, A 52-year-old La Palma California inventor named **Gilbert P. Hyatt** was awarded a patent by the U.S. Patent Office for a *Single Chip Integrated Circuit Computer Architecture* he first applied for in **1970**. The original application describes an integrated circuit containing ROM and RAM for storing data. The delay in the patent award is as yet unexplained and it may be that the Patent Office goof will throw the entire industry into a spin. Texas Instruments sports over 5000 patents it aggressively defends. Many would likely turn out to be derivative of Hyatt's. The entire microprocessor industry is all abuzz with plans to squash this little fellow into the ground by tying him up with expensive legal challenges. But at this point, he seems to have the upper ground. The U.S. Patent office has issued the patent.

FREE PERSIAN GULF FAX HOTLINE

U.S. Sprint Communications Company is anxious to demonstrate their **SprintFAX** fax service. As a result, they've begun distribution of a free hourly update on the Iraq situation. **The Crisis Update: Persian Gulf** is available at no charge. Simply dial **(800)676-2255.** An automated system allows you to enter your fax telephone number for delivery and your personal telephone number for cover sheet routing within your organization. The service then delivers a two page newspaper covering, oil prices, news of U.S. military actions in the area, and news of Iraq and Kuwait. The service is updated hourly.

SprintFAX can broadcast your fax information to every location on your list, from 25 to 2500 locations, within minutes for less than the cost of first class postage. They also offer a document-on-demand service - essentially the service they are demoing with Crisis Update. Document on Demand can be configured to operate on either a toll free 800 or a billed 900 telephone number. For more information on the services, contact SprintFAX at **(800)366-3297.**

UDS ANNOUNCES 9600 bps RADIO MODEM

Universal Data Systems has announced a 9600 bps half-duplex modem that transmits data by radio over the **450MHz** band. The **$1295** unit requires an FCC license to operate. The unit, termed the **DR96**, features a rechargeable 7.5 v battery and separate charger. It connects to any microcomputer via a standard RS-232c serial port. The company expects to make the unit available this month. Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35805; **(205)430-8926.**

TELEPHONE COMPANY NEWS

US West has completed a trial of **Caller ID** in Grand Forks North Dakota. About 400 residential and small business customers participated in the six month test. Over a million calls were pro-

Multiuser BBS with dBASE

The Bread Board System *(tbbs)* Information Manager provides high performance multiuser electronic mail, custom databases, and protocol file transfer on a single PC using only DOS. No LAN or multitasker required.

Think of the possibilities—up to 32 users on a single CPU using only DOS and *tbbs*. Speeds up to 19,200bps with no perceptible multiuser interference! Mix local and remote terminals.

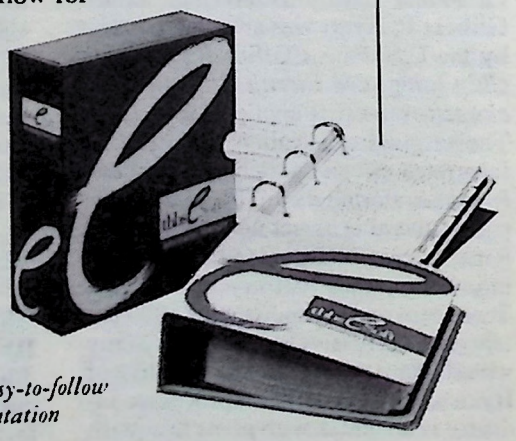
All of the complications of simultaneous multiuser file access are handled for you transparently by *tbbs*. You design and build your specific application with menu templates as though you were in a single user environment. *tbbs* does the rest.

Building custom multiuser information systems has never been easier. You get the system you want, in the shortest possible time. And once your system is built, it is extremely reliable. Because there are no tricky multiuser operating systems or LAN hardware to tame, your system will be stable immediately. Adding users does not affect any programming in the system itself, and thus can be done quickly and will work immediately.

Move beyond multiuser bulletin boards by adding The Data Base System *(tdbs)* dBASE language compiler and expansion module to allow custom multiuser dBASE programs. With *tdbs* you get the easiest multiuser dBASE capability available anywhere. Transparent file sharing, shared screen updates, and remote or local access with no extra programming effort.

16 user *tbbs* $895, 16 user *tdbs* (dBASE compiler and expansion module) $995. Also available in single and 32 user versions. Available now for immediate delivery.

Call for more information and access to a demonstration system (303) 699-6565.



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cessed. The free call blocking option was only used 145 times during the test. The company plans to offer Caller ID and free caller ID blocking to 45,000 Boise Idaho residences and small businesses at a monthly charge of $5 to $7 beginning the first of the year.

According to AT&T, **655,500** call attempts were made to Kuwait during the August 2 invasion. Very few got through. Today, about 1200 calls per day from Iraq to the US make the trip. Call attempts from the US to Iraq, Kuwait, and Saudi Arabia are up as much as **340%** but most attempts into Iraq fail and none at all make it into Kuwait.

MCI plans to spend **$1.1 billion** during 1991 to catch up to Sprint and AT&T in the move toward an all digital network. The **$7 billion, 46,000** mile MCI network is roughly twice the size of Sprint's net but contains less fiber with but **17,000** miles. Acquisition of **Telecom*USA Inc.** brought the total up to **20,000** miles. AT&T provides **31,000** miles of fiber and Sprint's **23,000** mile network is all fiber. MCI is making arrangements with Williams Telecommunications Group of Tulsa Oklahoma to use their **11,000** mile network. Fiber is not only a cleaner transmission medium, but it's actually less expensive to maintain. MCI is expected to take a **$550 million** write down on their analog circuitry.

CANADA'S LARGEST BBS BANKRUPT

Jud Newell started **Canada Remote Systems BBS** in the Toronto Canada area in 1981. The system grew to become Canada's largest with over **8,000** paid subscribers. This past August 13, the system dropped carrier at their **(416)232-0442** number. The voice number of their office in Mississauga was answered by a recording.

By most accounts the system continued to do well although it suffered from the slowdown all systems incur during the dog days of summer. But encouraged by the heady growth experienced two years ago, Newell had borrowed a large sum of money to finance expansion of the PCBoard system to its current 75 telephone lines and add staff and services. Much of the debt was actually incurred to fund sales of computer equipment, modems, and shareware diskettes. Servicing the debt became too much of a burden and the system went into default. On August 4, Newell acknowledged to his staff that they couldn't go on. Equipment was auctioned and plans to close the service were initiated.

The actual BBS service appears to have been profitable. But with **8,000** paid subscribers, BBS revenues only accounted for about **30%** of the company's business. CRS had become heavily involved in selling networked computer systems, modems, and shareware diskettes and from all accounts, those areas dragged the operation down. According to an article in Computing Canada, CRS had secured debt of some **$275,000** and unsecured liabilities of some **$300,000** - about half owed to Bell Canada. And according to Newell, the financial difficulties were the result of planning for an expansion that didn't come in Canada's current economy.

In an August 31 E-Mail message, Newell announced that **Neil Fleming**, a CRS subscriber, has offered to buy the assets of the BBS and resume operations. Fleming will leave his job at the Toronto firm of Jonas and Erickson to run Canada Remote full time. Mr. Fleming tells us he has the backing of a **$100 million** company to resurrect CRS and intends to do so with style. As of September 10, he indicated they would have six to eight lines up within the week and actually expand the service to **100 lines** by the end of the month. Not only will all existing subscriptions remain in effect, but all subscriptions would be extended by the amount of down time. Additionally, Fleming plans to keep Jud Newell and staff member Brenda Brennan on as employees. The new access number has not been assigned yet. We will keep you posted. Canada Remote Systems, 1331 Crestlawn Drive, Unit D, Mississauga, Ontario, Canada L4W 2P9; **(416)948-6250** voice.

PRACTICAL PERIPHERALS 9600 bps V.32 MODEM

Practical Peripherals has announced another entry into the 9600 bps V.32 modem market. Their **PM9600SA** model supports V.32 modulation and offers V.42bis error correction/compression - effectively supporting MNP5 compression as well. Best of all, the unit is somewhat reasonably priced at **$699**. They plan to ship during September. Practical Peripherals, 31245 Labaya Drive, Westlake Village, CA; 91362; **(818)706-0333.**

CPSR TO UNDERTAKE EXPANDED CIVIL LIBERTIES PROGRAM

Computer Professionals for Social Responsibility (**CPSR**), a national computing organization, announced it would receive a two-year grant in the amount of **$275,000** for its Computing and Civil Liberties Project. The Electronic Frontier Foundation (**EFF**),founded by Mitchell Kapor and John Perry Barlow, made the grant to expand ongoing CPSR work on civil liberties protections for computer users.

At a press conference in Washington, Mr. Kapor praised CPSR's work, "CPSR plays an important role in the computer community. For the last several years, it has sought to extend civil liberties protections to new information technologies. Now we want to help CPSR expand that work."

Marc Rotenberg, director of the CPSR Washington Office said, "We are obviously very happy about the grant from the EFF. There is a lot of work that needs to be done to ensure that our civil liberties protections are not lost amidst policy confusion about the use of new computer technologies."

CPSR said that it will host a series of policy round tables in Washington, DC, during the next two years with lawmakers, computer users, including (hackers), the FBI, industry representatives, and members of the computer security community. Mr. Rotenberg said that the purpose of the meetings will be to "begin a dialogue about the new uses of electronic media and the protection of the public interest."

CPSR also plans to develop policy papers on computers and civil liberties, to oversee the Government's handling of computer crime investigations, and to act as an information resource for organizations and individuals interested in civil liberties issues.

The CPSR Computing and Civil Liberties project began in 1985 after President Reagan attempted to restrict access

to government computer systems through the creation of new classification authority. In 1988, CPSR prepared a report on the proposed expansion of the FBI's computer system, the National Crime Information Center. The report found serious threats to privacy and civil liberties. Shortly after the report was issued, the FBI announced that it would drop a proposed computer feature to track the movements of people across the country who had not been charged with any crime.

"We need to build bridges between the technical community and the policy community," said Dr. Eric Roberts, CPSR president and a research scientist at Digital Equipment Corporation in Palo Alto, California. "There is simply too much misinformation about how computer networks operate. This could produce terribly misguided public policy."

CPSR representatives have testified several times before Congressional committees on matters involving civil liberties and computer policy. Last year CPSR urged a House Committee to avoid poorly conceived computer activity. "In the rush to criminalize the malicious acts of the few we may discourage the beneficial acts of the many," warned CPSR. A House subcommittee recently followed CPSR's recommendations on computer crime amendments.

Dr. Ronni Rosenberg, an expert on the role of computer scientists and public policy, praised the new initiative. She said, "It's clear that there is an information gap that needs to be filled. This is an important opportunity for computer scientists to help fill the gap."

CPSR is a national membership organization of computer professionals, based in Palo Alto, California. CPSR has over **20,000** members and **21** chapters across the country. In addition to the civil liberties project, CPSR conducts research, advises policy makers and educates the public about computers in the workplace, computer risk and reliability, and international security. For more information contact: Marc Rotenberg, CPSR Washington Office, 1025 Connecticut Avenue, NW Suite 1015, Washington, DC 20036; **(202)775-1588** or Gary Chapman, CPSR National Office, P.O. Box 717, Palo Alto, CA 94302;**(415)322-3778**

9600 bps V.32 POCKET MODEM

The affinity between laptop computers and online services is both strong and growing. Road warriors can collect information, generate memos, sales orders, and field reports and use online services essentially as a mail drop by dialing into any of several commercial services or the company BBS. The internal 2400 bps modem for these laptops has been a bit pricey in the past because of the unusual physical format and the small market. In the past year, these have become more common and the price has dropped considerably.

But there is something to be said for an external modem for laptops. They generally don't consume precious laptop battery power since they usually use their own 9V battery or in some cases are even powered by the telephone line itself. And, they have the ability to be used on a number of different machines.

Migent is credited with introducing the pocket modem. Generally the size of a package of cigarettes, you simply plug them into the serial port on the back of the laptop. A standard RJ-11 modular telephone cord is then plugged into the modem.

Touchbase systems has carved out quite a niche by marketing some of the best, and some of the priciest, of these pocket modems with their World Port line. One of their most popular models is a 2400 bps modem with fax built in. Their newest announcement is the World Port 9600. This 8-ounce device lies **4.8** inches to the fore and aft, **2.75** inches across, and a lonely inch into the ether. This would comprise a rather largish package of cigarettes. But the new model delivers true **9600 bps** fully compliant with **CCITT V.32** standard along with MNP level 1-4 error correction. And it will work with any laptop featuring an external serial port. At a wallet busting **$899**, it is clear Touchbase is a bit proud of this unit, but this first battery powered V.32 modem is a welcome addition to the PC communications bag of tricks and we hope the harbinger of more affordable V.32 pocket modems in the future. Touchbase Systems Inc., 160 Laurel Avenue, North Port, NY 11768; **(516)261-0423.**

INTEL INTROS 9600 bps V.32 MODEM

Intel Corporation's Personal Computer Enhancement Operation (PCEO) is introducing a new 9600 bps external modem. The **9600EX** provides **9600 bps CCITT V.32** and **V.42bis** functions. V.42bis provides data compression and error correction to boost throughput to as high as **38 kbps.**

The IBM version is priced at a competitive **$799** and includes a terminal program titled **Communications by Crosstalk** provided by Digital Communications Associates, developers of Crosstalk Mark IV and Crosstalk for Windows. A Macintosh version is available as well at **$819** which includes a serial cable and a communications program titled **Quick Link II** by Smith Micro Software Inc.

The company is quite enthusiastic about the future for 9600 bps V.32 modems. They cite a Dataquest Inc. report predicting sales of **150,000** V.32 modems in 1990 and a cumulative sales growth from 1989 to 1993 of **44%** in V.32 vice a scant **8%** in the modem market overall.

The modems feature a five-year warranty and free telephone technical support at **(503)699-7000.** The company has been aggressive in providing innovative support functions. Their Intel Support BBS operates at **(503)645-6275** providing announcements and software for their products. Al Kinney is system operator. Newer to the stable is a four-line FaxBack information request service. The service operates at **(800)525-3019** using an 80386 PC and four of the companies Connection Coprocessor cards to transmit information by Fax. You simply call the number, enter your fax telephone number, and enter a four digit code representing the literature you want to request. Item **9402** provides information on Intel Modems. The service then sends the requested literature to your fax. Intel PCEO. 5200 N.E. Elam Young Parkway, Hillsboro, OR 97124; **(800)538-3373** voice.

PRODIGY TEAMS WITH BT TYMNET FOR NATIONAL COVERAGE

Prodigy Information Services has announced their alliance with packet switch network giant BT Tymnet to expand availability of Prodigy nationwide. The new strategy allows callers from an additional **300** locations to access the Prodigy service. According to Prodigy president Theodore Papes, this advances their move toward a national service by two years.

Prodigy, a service of computer manufacturer IBM Corporation and Sears, Roebuck, and Co., has made some inroads in the online services market with a network of regional services available by local call at a flat fee of **$9.95** per month. The service has grown to over **460,000** users in less than two years. This success has not come without cost. Some analysts estimate the total investment in Prodigy to approach **$1 billion.**

The service introduces several notable developments in pricing, offerings, and presentation. The service is priced at a flat monthly rate of **$9.95** and you can use it as much or as little as you like. This places its business activities more in line with cable television companies than with previous videotext services. Prodigy operates its own network and so unlike CompuServe and GEnie, callers are not charged based on the amount of time they spend online. Further, you may access Prodigy day or night at will. Most "clock" rate services have very high hourly rates during the day and more modest ones in the evening making online activity largely a nighttime sport. On Prodigy, there is no difference based on time of day.

The other element most noticeable about Prodigy is the presentation format. To access the service, in addition to an IBM computer, password/ID, and modem, you also must have some graphics capability and run the Prodigy proprietary terminal emulation software. This software uses a variant of the North American Presentation Level Protocol Syntax (**NAPLPS**) for graphics. Most online services are reduced to the lowest common denominator among personal computers - American Standard Code for Information Interchange (**ASCII**) allowing very crude text-only transmissions. Some IBM bulletin board systems use the slightly more adroit American National Standards Institute specification for terminal communications (**ANSI**) graphics to add blinking text, bold, underline, and color and a few BBS artiste's have emerged to paint fairly attractive screens using **ANSI** graphics. But **NAPLPS** essentially offers a method for communicating what appear to be true bit-mapped **16**-color graphics using a screen description language probably most analogous to the Postscript language popularly used to drive laser printers. The Prodigy terminal software allows them to use this language to communicate in pictures quite effectively.

The only thing Prodigy has in common with existing online services such as CompuServe, Dialog, GEnie, etc., is that they all use modems. Nor is it in any sense comparable to an electronic bulletin board. Prodigy has no provisions for uploading, downloading, or storing files of any type. In fact, you cannot log a session to disk or printout screens, with a few very controlled exceptions, to the printer. Its E-Mail services are

abysmal although you can send mail to other subscribers. Its Headline News is remarkably timely but it is scattered helter skelter throughout the service and there is no way to just read a newspaper in any handy fashion. If you choose to compare it to commercial online services and electronic bulletin boards, you will likely be disappointed. A good multi-line BBS with a file library and a chat function will likely be more valuable to you.

But Prodigy is, beyond all else, - pretty. The presentation is simply stunning. It appears to be bit mapped graphics. Every screen on Prodigy has truly attractive and in some cases stunning art. You will often see keys on the left side of the screen next to menu options that look so real they have light highlights on the edges and actually seem to cast a shadow - similar to Windows version 3.0.

Each screen has an advertising panel at the bottom noting some product or another that you should ostensibly rush out and buy. A **LOOK** button allows you to get more details on anything that happens to catch your eye. And actually, you will likely find that a number of things will. Nearly a hundred companies are now advertising on Prodigy and frankly, some of them are interesting. Others, less so.

One of the more attractive features of the service is the Prodigy **QUICKQUOTES** service - essentially an extension of the popular Dow Jones News Service. You will pay a handsome hourly rate for this quote service on Dow Jones own system in the evening and an exorbitant one during the day. But the quotes are available on Prodigy at no extra charge and it is one of the best quote services available. For casual **NYSE** stock watchers, this feature alone may justify **$9.95** per month.

As a general note on speed, it is true Prodigy is a tad on the slow side. When you press a key, a little **WORKING** sign appears in the top corner of the screen until the data can be found and transmitted to your machine. This may be three or four seconds or it may in some cases be **15** or **20**. It is both annoying and irritating but we've experienced similar delays on other systems and at least on Prodigy, you're not called upon to pay for their foibles via a clocked charge. Consider **2400 bps** a minimum connection and pray that **9600 bps** operation becomes truly universal within the next year or so.

Prodigy really opens a new genre of online services. There may well be more going on here than just a poorly executed but pretty version of CompuServe. The commercial advertising/online shopping/NAPLPS graphics aspects of the service offer some interesting possibilities. This would be an easy service to dismember editorially and a number of columnists have done so with both style and substance. We've taken a couple of hip shots at it ourselves in the past and all current criticisms may well be justly founded. But they also might be an easy out.

It can be as difficult to drive nails with a fish hook as it is to catch a bass with a claw hammer. By this we mean that if your only perspective in life is driving nails, a fish hook may appear at first glance a pretty damn useless device. And we understand they are none too popular among fish as well. But from a slightly different view, the fish hook has proven itself to be a remarkably efficient design for snagging fish by the upper lip, a task for which the claw hammer is notably ill suited. As a device for performing the operations most modem savvy PC owners are accustomed to, we don't think Prodigy is particularly attractive. File uploading, downloading, chat, and E-Mail comprise the usual list of suspects for online services. On the other hand, the current crop of online services are none too exciting to look at from a visual perspective and they've proven to be a notoriously poor way of trying to market something.

Further, it is about time we broke free of the chains imposed on online communication by the constraints of ASCII text. Higher speed modems should allow a higher band width of communication. By mailing out half a million copies of their NAPLPS-based terminal software, not to mention introducing thousands of people to modems for the first time, Prodigy may proselytize the masses to online communication and hand us a graphics communication tool in the process.

Prodigy Services Company, 445 Hamilton Ave., White Plains, NY 10601; **(800)759-8000** voice **(303)442-0571** data.

SYNCHRONIZE YOUR PC CLOCK ON-LINE

This month, we again face our autumn time change from **Daylight Savings Time** back to **Standard Time.** This year, the last Sunday of October falls on the **28th** of the month and we thought it would be a good time to once again revisit one of our favorite on-line services, the National Institute of Science and Technology (NIST) on-line time service. You can easily use this service to synchronize your PC clock calendar with the NIST atomic clock in Boulder Colorado. In this article, we will describe at some technical level of detail how the service works. Then we'll show you to how to use it without dealing with any of the technobabble.

The National Institute of Science and Technology (NIST) Time/Frequency Division in Boulder allows personal computer owners who have a modem to dial up NIST by telephone and connect their PCs to the Master Clock in Boulder; allowing retrieval of the correct Universal Coordinated Time (UTC) in American Standard Code for Information Interchange (ASCII) text format. The Universal Time Act legally establishes the US Department of Commerce NIST as the official time standard for all civilian activities in the United States. These people are quite literally and legally the keeper of our clock. All radio and television stations synchronize to the Boulder service.

The NIST data service operates at a speed of **1200 bps** using **8** data bits, No parity, and **1** stop bit (8N1). It's available on a three-line hunt group at **(303)494-4774**. Each of the three lines has its own Time Code Generator device linked to the **NBS 9** cesium beam atomic frequency standard used as a time base at NIST. This "atomic clock" is accurate to one second in **300,000** years. Users who dial the service and connect via modem will receive an ASCII text string transmitted each second with an asterisk time mark. The string is repeated for at least ten seconds with automatic disconnect occurring at **55** seconds. The string contains a wealth of time information including modified

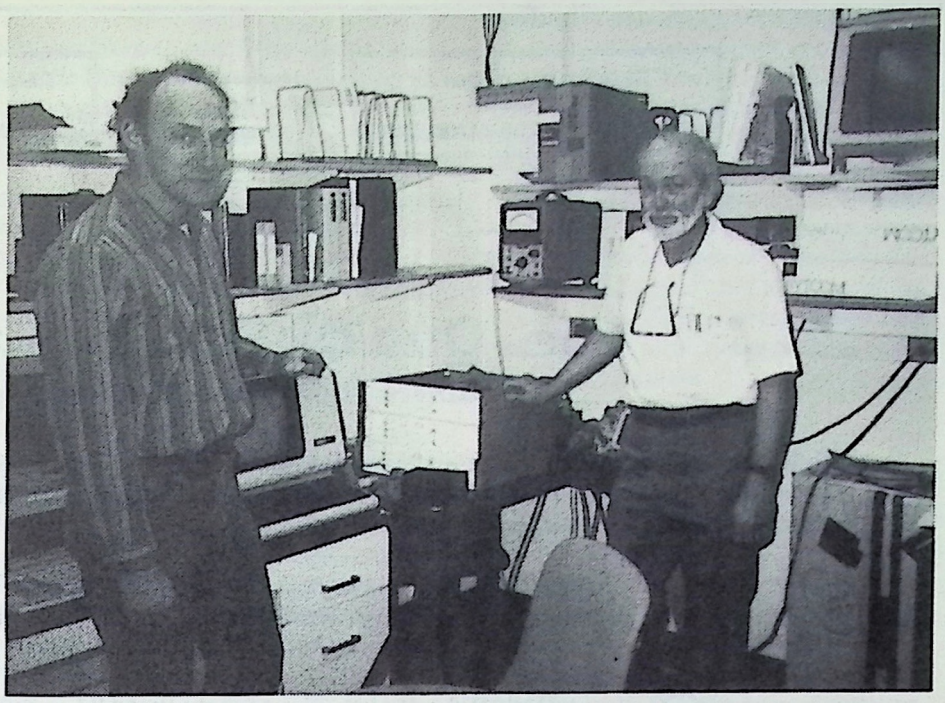
Julian date, year, month, day, hour, second, leap second status, daylight savings time countdown, a correction factor termed **DUT1**, and a telephone line delay correction factor. Finally the characters **UTC(NBS)** followed by the asterisk time mark.

*47096 87-10-28 16:28:13:00 1 0.4 007.9 UTC(NBS)**

The modified Julian date is the number of days occurring since noon, **January 1, 4713 B.C.** minus the constant **2,400,000.5.** (**47096** in the example string above). It's used quite a bit by astronomers and earth scientists since it maps a combination of earth, lunar, and solar cycles that repeat only at extremely long intervals (thousands of years).

The leap second status character will contain a **0, 1,** or **2** with **0** indicating no leap second activity; a **1** indicating a leap second will be added to Universal Coordinated Time (**UTC**) at the end of the current month; and a **2** indicating a second will be subtracted from **UTC** at the end of the month. Historically, a leap second has been added to the last month of each year to coordinate the atomic based **UTC** to the astronomically observed earth time (**UT1**) to within **9/10** second. This is necessary due to the current trend toward slower rotation of the planet. With the **December 31, 1988** leap second added, **UTC** and **UT1** now lag International Atomic Time (**TAI**) by **25** seconds.

The daylight savings time countdown character will contain a two digit character indicating a countdown to the next change from Standard Time to Daylight Savings Time or back. A value of **00** indicates no change imminent. About **49** days prior to the change from Standard Time to Daylight Savings Time in the spring, the countdown from **99** to **50** begins with the change occurring at **50.** This occurred on the first Sunday in April - the 1st of April this year at **2:00 A.M.** This flag remains at **50** until **49** days prior to the autumn change back to Standard Time. It will then count down from **49** to **00** when local time falls back one hour - again at **2:00 AM.** This occurs the last Sunday of October - the **28th** of the month in **1990.** The flag will then remain **00** until **49** days prior to the next change.



Marc Weiss (left) and Dick Davis of NIST Time Service in Boulder, Colorado with Time Mark Generator Device.

The **DUT1** correction factor consists of three characters containing the deviation in tenths of seconds between atomic based **UTC** time and the astronomically observed earth time **UT1.** The first character of the factor contains either **0** or a minus (-) sign indicating a leading or lagging time relationship respectively. The sign is followed by a decimal point and a single numeric value between **1** and **9** indicating the actual number of tenths of a second deviation.

The asterisk character (*) marks the exact instant when all information in the **ASCII** string is correct and so serves as the actual time mark. Unfortunately, the string itself is delayed in transmission through the telephone switching circuitry. This "line delay" can vary between **20-25** milliseconds (**0.020** seconds) for a local call up to **250-300** milliseconds (one-quarter second) for long distance calls routed via satellite.

Fortunately, Dick Davis, the mind behind the Time Code Generator hardware, and Marc Weiss, who wrote the **Z80** assembly language software for the service, devised a very clever solution. They built a delay correction algorithm into the software. To use this, simply echo the asterisk back to **NIST** immediately on receipt. If four consecutive echoes are received, the service will use these echoed characters to calculate the average time between asterisk transmission and receipt of the echoed asterisks. This value is halved to produce a pretty close approximation of the one way delay time. The next transmitted string is corrected by this amount and the asterisk changed to the pound (#) character to signal the modification. The actual line delay in milliseconds is also posted in the **ASCII** string immediately preceding the characters **UTC(NBS).** Using this technique with some efficient software and a relatively fast computer can allow synchronization of a PC to the **NIST** standard to the millisecond range. While not of the microsecond (millionths) accuracy that the people at **NIST** are fond of dealing with, this is considered adequate accuracy for most spreadsheet operations.

Obviously, to use this service effectively to synchronize your PC Clock/Calendar to the **NIST** atomic standard, you would need to write a short software program to dial the telephone, echo the characters, and capture the time. It would also need to determine what time zone you were in and calculate your local time from the **UTC** time. Fortunately, **NIST** has generated

such a program for you. It is titled NBSTIME2.ARC and it is available for download from the Boardwatch Online Information Service at (303)973-4222 as well as many other free local bulletin board systems around the country. The program includes a configuration program you run to establish some information about long distance dialing, outside lines, modem initialization, and what time zone you are in. Once you answer a fairly straightforward series of questions, you can run the NBSTIME.EXE program which will automatically dial your modem, fetch the correct date/time information, and update your clock calendar. Your system will then be synchronized to the official time standard for the United States to within about 1/100 of a second - the maximum "granularity" of the PC clock.

MORE ON OPERATION SUN DEVIL AND THE ELECTRONIC FRONTIER FOUNDATION

The Electronic Frontier Foundation (EFF), set up by Mitch Kapor and John Perry Barlow to extend civil liberties and constitutional protections to the online world of CyberSpace, seems to have drawn its first blood in the case of the United States vs. Craig Neidorf AKA Knight Lightning.

Neidorf, a 20-year-old political science major at the University of Missouri in Columbia, edited an electronic newsletter titled *PHRACK*, the Journal of Hackers and Phreakers, published from November 1985 until the Secret Service closed it down in January 1989. The U.S. Attorney's office in Chicago held that Neidorf had reprinted illegally obtained information regarding BellSouth's enhanced 911 emergency telephone service. They charged him with wire fraud and interstate transportation of stolen property valued in excess of $5000 - a felony.

From what we can gather, Neidorf, known online as White Lightning, met up with another online dweller, Robert Riggs of Atlanta who termed himself The Prophet. In about September 1988, Riggs contacted Neidorf and offered to get him an inside document from BellSouth for publication in Phrack. In December, Riggs, along with Adam Grant, 22 of Atlanta - known online as THE URVILLE, and Franklin E. Darden Jr., 24, of Norcross Georgia, - known as THE LEFTIST, downloaded a document from BellSouth's AIMS-X computer in Atlanta. Apparently Riggs had enjoyed undetected access to the system since the previous February. He not only didn't damage the system, but apparently took some pains to cover his tracks. There still isn't any real record of his being there.

The document was titled *BellSouth Standard Practice 660-225-104S Control Office Administration of Enhanced 911 Services for Special and Major Account Centers* dated March, 1988. In January 1989, Riggs uploaded the document to a system titled Jolnet BBS operated by Rich Andrews in Lockport Illinois. Riggs had an account on Andrews' system under the name Robert Johnson. Neidorf downloaded the file from Jolnet, made some editorial corrections for the published version, and on January 23 uploaded the corrected version back to Jolnet for Riggs comment.

On February 24, 1989, Neidorf electronically published the document as part of issue 24 of PHRACK. Some time later, Rich Andrews, innocently suspecting the file was proprietary, contacted AT&T's Belcore unit about the file. AT&T and BellSouth contacted the Justice Department and told them the document was valued at $79,449. On January 29, 1990, nearly a year later, Special Agent Timothy Foley of the United States Secret Service served warrants on Neidorf and seized his equipment for examination. Neidorf was charged with wire fraud and interstate transportation of stolen merchandise valued at more than $5000 under Title 18, Section 1343 of the United States Code. Riggs, Grant, and Darden were also charged in Georgia.

In a grand jury indictment, Neidorf was remanded for trial largely because he had transported stolen property valued in excess of $5000 across state lines. Oddly, the value of the document had mysteriously deflated to **$23,900** by this time. As we'll see, document deflation becomes a big problem for the government and the telephone company by the time this tale ends. On July 9, Riggs, Darden, and Grant pled guilty to the charges. Their sentencing is currently scheduled for September 14 in Atlanta before judge J. Owen Forrester. Neidorf pled not guilty.

His trial began in the U.S. District Court in Chicago with jury selection beginning July 23. Neidorf was represented by Attorney Sheldon Zenner, of the firm Katten, Muchen, and Zavis. The prosecutor for the Justice Department was Mark Cook. Much of Neidorf's case was to rest on 1st Amendment to the U.S. Constitution rights and his status as press to publish the document. He never got a chance to present it.

The Electronic Frontier Foundation, formed by Mitch Kapor and John Perry Barlow barely two weeks earlier to ensure civil liberties were extended to the online world, filed for status as a friend of the court. They secured the testimony of an expert witness. The witness had located the entire contents of the 911 document - available from BellSouth by mail to anyone who could read English for a grand total of **$13** plus shipping costs. The document was not only the completely innocuous bureaucratic babble we described in our August issue, it was also freely available to the public at a nominal price. Not only had the defendants not damaged anything in the BellSouth computer, but what they had stolen didn't wind up being of any significant value whatsoever. The prosecutor immediately dropped all charges in embarrassment - ending the trial.

The story doesn't really end there. Riggs, Darden, and Grant have already pled guilty to stealing a valuable document that now turns out not to have been so very valuable. Neidorf has spent thousands of dollars on legal fees and vows not to resume publication of PHRACK. Were it not for the resources and efforts of the EFF, he could theoretically have been faced with further legal costs and possible conviction.

We just have to ask. Why couldn't our Justice Department, after mounting an investigation that lasted nearly two years and at some points involved as many as 150 law enforcement agents - in other words MILLIONS of our tax dollars to keep us safe from these desperadoes, have mustered at least the resources EFF did within 13 days of their formation to find out the valuable proprietary property of the telephone company they were protecting was actually available by mail order for **$13**? The Justice Department limply complains they were "misled" by AT&T and BellSouth regarding the true value of the document. They mounted a four-fleet assault, arrested these people, seized their equipment, convened grand juries, and actually held a public jury trial without checking to determine what was actually stolen?

So far, out of the entire Sun Devil Operation, we've seen a handful of individuals actually charged with crimes. One of them was on a local weapons registration violation - no computer crimes. They found a couple of unregistered handguns during the search. He still lost his BBS and two unrelated computers indefinitely. Four were involved with this E911 file case. Leonard Rose AKA TERMINUS, is being investigated for transmitting 19 pages of hacked **Unix SVR 3.2** source code by modem. A game manufacturer in Austin lost his equipment for three months, subsequently got it back, and still doesn't know what it was about. Even Rich Andrews, who reported the 911 document, had his BBS equipment seized. Virtually all the "crimes" involve telephone company computer security. The concept of Unix security is a classic oxymoron. The telephone companies launched Operation Sun Devil. We've spent millions to send Secret Service agents scurrying about the country chasing wil'o the wisps, rumors, and petty thievery. Let's hope the EFF can make some headway in one of their stated goals - to educate our law enforcement people on the implications of their blundering stumble through CyberSpace.

Given the government overreaction to the Legion of Doom and the individuals involved, it would be easy for us to cast these young men as heroes. In our eyes, they are not. The small slice of phreaker/hacker mentality bent on mischief we have come into direct contact with from time to time is generally not charming. They are by and large a group of pathetically maladjusted, socially immature individuals seeking whatever attention they can garner by dubious heroic deeds against the telephone company. No doubt Riggs and Neidorf considered themselves truly of the elite by procuring the E911 document and neither had any idea it was a commonly available document.

But the U.S. Justice Department, the Secret Service, and the Federal Bureau of Investigation have proven - beyond a shadow of a doubt - that they are completely incapable of telling the good guys from the bad guys in this area. The typical government ploy to expand its powers by "making us safe" from some imagined horror in return for a piece of our liberty was particularly clumsy in this case. The problem is a large number of truly creative people experiment with online technology in areas even the long time aficionados of the genre will admit are "gray". Not so much that the rule of law is subverted, there aren't even any well cast conventions yet. If we allow our government to run slipshod over the small fry, it would have a chilling effect on the online world at large. An analogy: Yes, we do have a problem with our youth's involvement with drugs. Solution: Outlaw all research /experimentation in chemistry and medicine. The flasks and white coats all look the same - seize them???

The price of liberty is eternal vigilance. Unfortunately, the price of even a bit of temporary vigilance is cash. The online world needs a lobbying organization anyway and perhaps EFF is the first group capable of doing it. They've applied for Non-Profit tax-exempt status and your contribution should be tax deductible. Send us a receipt showing a contribution of **$100** or more to EFF with your mailing address and we'll kick in a free subscription to *Boardwatch*. Those wishing to support the Electronic Frontier Foundation may contact them at 155 Second Street, Cambridge, MA 02142; **(617)577-1385** voice; **(617)225-2347** fax. We understand they are planning a BBS for the near future. We'll keep you posted.

The Psychology of Electronic Mail

by Phil Becker

New technologies are always accompanied by changes in how the society which uses them operates. No technology in human history has changed how people and society function as totally as electronic communications. Starting with the telegraph, through the telephone, radio, television, and now FAX and computer communications, each advance has dramatically changed society on all levels.

We live at a time when these existing technologies are merely being "refined". Some say that it all has really been done, we are just making it cheaper and more widely available. However, a technology really has its maximum impact on people and society at that stage. As an example, satellite television has existed in more or less its current form for over twenty years. However, it is only this year that CNN reached a truly international scope. Observe how that has affected the "Crisis in the Gulf" in its opening weeks.

Even the fact that I don't have to use more than the simple quoted expression "Crisis in the Gulf" to convey a very complex theme is a result of these communication technologies. Wide reaching communications gives us a common set of concepts and symbols. As a result, we're seeing unprecedented international agreement and rapid action in the Kuwait situation largely because of advances in communications. See history for the probable pre-satellite TV reactions of the world community in similar situations.

It is my belief that society has only begun to see the changes which electronic communications will bring. I think this is especially true in the realm of electronic computer communications, such as BBS message conferences, store and forward mail (FidoNet, UseNet, PC Relaynet etc.), and the FAX machine. FAX machines, incidentally, have been sold since the early 1930's but only recently did the price/performance ratio cross the threshold which is now making them omnipresent -- an example of the effects of "refinement" on a long existing technology.

What does all of this mean to you? Understanding how a technology affects those who use it is essential to using it effectively. Failure to understand this relationship leaves you at the mercy of the technology - with a corresponding loss of control over its impact on your business and your life.

We are now clearly at the point of having "unleashed" the technology of personal computer communications. However, very few really understand how to "harness the power" of this technology. History teaches us that those who know how to access information and handle it well (using whatever technology was then current) do very well for themselves in society. Those who don't, generally suffer the consequences. If you understand the way personal computer communications affect those who use it (including yourself) you will become one of those who can use it well.

To understand the impact of electronic communications, we first must examine its characteristics. Then we can see how these affect people. The most important characteristics which affect people are:

1. Rapid transmission with delayed feedback.

2. Low context. Only written words, no sight, sound or body language.

3. Privacy while reading or composing. Results may be very public and become a permanent written record.

A central aspect of human behavior involves establishing control over our environment. As a result, people fight to establish control if they don't feel comfortable with a situation and they fight any situation which makes them feel inadequate. Two of the above characteristics directly impact on this human instinct in a public message conference.

First, the lack of context makes it more difficult to extract information quickly and reliably from electronic communications. A message must be worded carefully to avoid being misunderstood. In normal conversation, our facial expression, hand gestures, and body language not only convey a large part of the message, but we also receive immediate feedback from the listener by observing them. In the electronic world, it is quite easy, given the informal "atmosphere" of a message conference, to assume that the reader will infer some portion of the message you didn't write - much as they would gain such information in a physical conversation. This rarely actually works in the written medium.

The delay between the time you enter a message in a public conference and the time you receive a reply makes it even easier to lose meaning and more difficult to correct wrong impressions. This delayed feedback challenges your feelings of being in control of the flow of your own ideas. If the recipient misunderstands your first message, their response may be inappropriate. Your message to "correct" the misunderstanding is delayed in transmission, and in a public conference others may see the error and also try to help by interjecting their own messages of "clarification" - not all of which truly represent your original intent. Now there are several messages flowing all of which are based on a single wrong interpretation of your first message. There may now even be several different "threads" based on distortions of your original idea that have progressed quite far.

At this point there are two problems – your original meaning has been largely lost, and -- because there is no natural instant feedback that this is being corrected -- the group has no clue as to when to stop. The result is that responses come in "waves" which are determined by the feedback time. Since the medium has low context in the first

place, it is very easy to have misunderstandings. Once a misunderstanding has occurred, it can be very difficult and frustrating to correct.

A contributing factor is the false sense of urgency that electronic communications create. When you receive a letter in the mail, you know you have time to think through any response and compose your own. If the same letter arrives by Federal Express, you don't feel you have the same freedom. You feel a sense of urgency. Because of the speed of the medium, it FEELS like your response should likewise be speedy. If that message comes via FAX, you get the feeling that someone is actually sitting there waiting for a response. If it comes via electronic mail, this feeling is aggravated even further. As a result, you feel pressed to respond immediately without taking the time to craft a properly detailed and well thought out message. And once sent, electronic mail forms a permanent written record which is virtually impossible to recall.

There is also a kind of "echoing" phenomenon in electronic message conferences. Many (if not most) daily communications don't require an extensive response. When we speak to someone face to face, all we need to know is that they heard and understood the message. A brief "Ok" with the right facial expression says it all. In electronic mail, this requires a return message which just says "I understand". This type of brief message can seem a bit silly or awkward to many people, and can lead to one of two outcomes. Either no response is given, leaving the sender unsure if the message got through, or they add unrelated or superfluous information to the response -- requiring yet another response from the original sender. This effect is widely recognizable in large public conferences as "the message thread that won't die" - even though nothing is really being said. Message conferencing software which generates automatic "return receipts" to verify a message has been read can be a big help here. But people will still feel a bit empty that there is no personal response.

With its rapid turnaround, a public conference "feels" very much like normal human conversation. However, with its low context and delayed feedback it is really quite different. This too often leads to poorly thought out - sometimes emotional responses, and other inappropriate behavior. For the reasons given above misunderstandings are easy. Because it is a public setting inappropriate face saving reactions can take place and small problems (often not really problems at all) easily blossom out of all proportion. Actual messaging "feuds" can break out. Delayed feedback acts as no feedback at all in these cases and so damping out such an occurrence takes a great deal of time. Much useless energy is expended in the meantime.

The privacy of electronic mail while reading and responding combined with delayed feedback can cause a feeling of false empowerment. This can also lead to inappropriate behavior in a public conference. Ensconced in the privacy of their own den, the message sender is removed from the body language and instant feedback of the group that might register disapproval in a conventional physical setting. This is why public conferences are very fragile and often require the presence of a "moderator" to succeed. However, establishing the "pecking order" is not easy since the privacy removes the normal social reinforcements of authority, even when most of the group agrees. Mechanical methods to enforce order can seem very authoritarian as well, creating discomfort in the group.

When considering how much moderating a given conference needs, remember that the nature of the medium is different than a "town hall" setting where the people are truly present. An emotional subject requires more structural intervention and ground rules. Any discussion group should have a set of rules that all agree to for stopping a conference which is in "message thrash" and for deleting bad information which occurs as a result.

In the end, too much information becomes no information at all. If a reader is required to follow a rapid data flow which has low content, they will become frustrated. Frustration leads to withdrawal, as the person now feels they are part of a situation they cannot control or even influence. Data transfer overwhelms content and the entire setting becomes a classic example of entropy at work.

Another psychological impact of electronic communications is that human beings always look for the control structure. Thus the question of "who is in control" arises. For a single BBS, the apparent answer is the SYSOP. In fact, some people become SYSOPs because they like this feeling of total control. In other more distributed cases (e.g. distributed conferences such as FidoNet etc.) there is no real control. However, people always impute control to someone other than themselves if they know THEY don't control a whole system. Thus there is a natural reaction that an ephemeral "they" are in control. By extension "they" are withholding information, since when people know a lot of information is present they naturally assume everyone else has access to more of it than they do.

Electronic mail isn't "good" or "bad" -- just different from normal human interaction. This can be very positive. The lack of normal social cues can often allow people to more freely express their thoughts. One obvious way this can be seen is the way in which the electronic conference enables people who have some disability.

Because no one can see them, people aren't hampered by their physical appearance, the sound of their voice, age, or other attribute which might cause a prejudicial reaction in a face-to-face setting. These people find (often for the first time in their life) that they are judged only by the content of their written thoughts.

People who may be shy, slow to fully form their thoughts, or easily intimidated by a group also find that the privacy and delayed feedback remove the pressure of mis-speaking. By removing the elements of stage fright and slowing the real time pace that often only the quickly glib "wits" can enjoy, the more thoughtful and considered respondents can also participate. The resulting liberation can be nothing short of amazing to see. It may be the first time in their lives they have a forum in which they can artfully express themselves.

The format of the public conference also enables you to ask a question to a group when you don't know who may have the answer. You essentially throw a question into the air and those who claim some expertise in the area can respond. The ability to pool information and make it more accessible is a primary benefit of message conferences. A conference also allows participants to self-select much more efficiently than normal human "networking". On the down side, it is easy to think someone has a correct answer when they don't, and the lack of context of the medium can cause errors here that are tough to correct.

Finally, there is the removal of space/time tyranny and ability to conduct group activities when the group is spread over a wide geographic area and variable time zones. The use of electronic mail as a form of "data answering machine" is one of its most liberating applications. The ability to connect laptop computers from anywhere at any time allows communication applications never before feasible. In this busy world, gaining control over your time can be vital, and electronic mail superbly addresses this need.

Used properly electronic communications can liberate people, increase productivity, and give us a vital edge in an information based society. Used incorrectly it can cause morale problems, feelings of inadequacy, and activate Luddite anti-technology urges in the disenfranchised.

The difference between a successful application of electronic communications and a failure is often the way the users of the system react to it. The major reason for bad reactions is that the users of a system feel controlled by the system, or inadequate when using it. Both of these reactions are avoidable if you keep in mind the characteristics of the medium and how they affect people. A few guidelines:

1. The medium counts. Well thought out user interfaces help a lot. Adroit message conferencing software allowing message "threading", return receipts, carbon copies, and attached files enhance communication. The more your software reflects the way people communicate in a non-electronic forum, the more comfortable and effective people will be in using it.

2. Explain the Rules. It may be necessary to periodically post messages explaining conference rules and conventions and explaining the facts of electronic life to the users. New participants almost always have the feeling that "Everyone else knows more than I do." This can occasionally lead to what verges on paranoia. Participants may react by reading only and rarely contributing (lurking) and in any event will face initial discomfort.

3. Adopt conventions to add context. Many long-standing conferences have adopted conventions that attempt to simulate the missing facial expressions and body language of normal conversation. Typically these take the form of character icons representing smiles, winks, sadness, regret etc. The colon and right parenthesis :) is the most common. If viewed sideways, it looks like a tiny smiling face. It is often surprising how the "message" of a comment changes by having a little smiling face at the end of it. They can actually be quite effective in preventing misunderstandings.

Remember that electronic conferences are by their nature fragile and can break down easily. A good set of rules and a moderator help a lot here. Note that it may be necessary to have a bit more authoritarian control structures in electronic message conferences than we would be comfortable with in more conventional forums. They are really not there so much to "censor" your counter arguments as to provide an orderly forum for their presentation.

Understanding the way electronic communications affect people will help you gain a competitive advantage over others who use this technology by making it as complimentary to human behavior as possible. It also will help you understand and focus your feelings when you are using a poorly thought out system -- allowing you to get the maximum benefit possible from that situation.

[Phil Becker is author of The Bread Board System (TBBS), a multiline BBS software program noted for strong message conferencing features. He may be contacted at eSoft, Inc., 15200 E. Girard Ave., Suite 2550, Aurora, CO 80014; (303)699-6565 voice; (303)699-8222 demo/support BBS. - Editor]

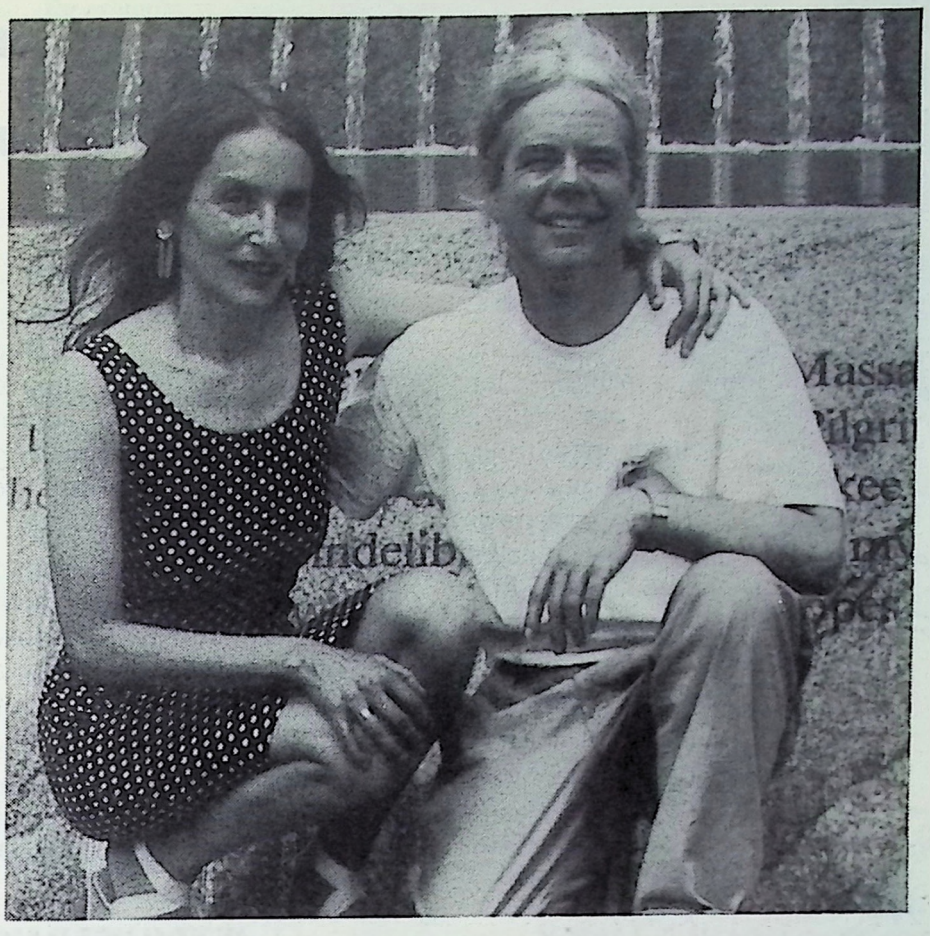
UNLIMITED ACCESS

CHANNEL 1 BBS

The husband/wife sysop team seems to be a recurring theme in the ongoing saga of the BBS cottage industry. Our cover girls this month are Brian Miller and Tess Heder, a Cambridge couple who run **Channel 1 BBS. Channel 1** is one of the largest, fastest growing PCBoard systems in the country today. When we interviewed Brian Miller by telephone a month or so ago, they were operating on **33** telephone lines. By the time we got online to examine it in detail, they were up to **45** lines. And their users apparently can't get enough.

According to Miller, the couple saw the BBS as a potential business from day one. During his initial modem discovery dialing frenzy, he contacted Jack Kilday's **Northern Lights BBS** in Portland Maine **(207)766-2467** and in his words "saw the light" when the Northern Lights color ANSI introduction scrolled up the screen. He became obsessed with BBS and was convinced there was a window of opportunity in the BBS world. He decided to grab that opportunity by starting one. He and Tess started **Channel 1** on two nodes in August of 1986. The Cambridge/Boston area was moving strongly into a high technology economy and the location couldn't have been better.

Brian is actually a psychologist and has a group psychotherapy practice. Tess Heder was an architect. She gave up her career to work with the BBS business end full time and Miller spends progressively more time with his computers and less with his practice. But he notes that many of the same satisfactions he received from the psychology profession are present in running a BBS. He see's the BBS as a form of virtual community creation exercise and the message conferences as a profound movement toward democratization. According to Miller, "There's something special about seeing a nine-year old kid teaching a Harvard University Professor online how to use his computer."



General BBS systems are a bit hard to review. **Channel 1** has no particular area of specialization to identify with or particular tone or personality based on a particular theme. According to Miller, they are essentially attempting to provide a general online service that undermines the commercial "dinosaurs" by being faster, better, cheaper, and more colorful. Sounds like a plan Stan.

And they seem to be winning. Miller claims callers have commented that they have **80%** of the utility of CompuServe at less than a tenth the price. That's a good perception to foster among callers. **Channel 1** currently has **11,000** active users and about **2,000** of those are paying subscribers at rates from **$25** to **$85** for various calendar subscription periods and daily access time limits. Unpaid callers can browse the system for **26** minutes per day with some limitations on the areas available. A three-month subscription with a **60** minute per day limitation is available at **$30.**

The service is, by BBS standards **BIG.** And not just by the standard measurements of access lines (45), storage capacity (**3.7 Gigabytes**) or available files for download (**45,000** individual archives). The system runs on enough hardware, that by Miller's own admission they can heat the house from the heat generated by the computers. The air conditioning runs year round and their electricity bill typically comes in at about **$500** monthly. The **45** computers run under a Novell Network.

They also sport **250** different message conferences from **Interlink, Relaynet, SmartNet,** and even the Unix world's **Internet** news groups. Additionally, **36** online game door programs are available offering everything from Scrabble to Tradewars along with a special message conference for callers to discuss strategies.

The strong suite of this system is organization. With **48** download areas, **36** online games, **250** message conferences, and several screens full of bulletins, this system has the potential to be more of a rat's maze game than a BBS. But the couple have obviously put in an immense amount of time organizing the system in brilliantly colorful and logical menus. Not only do they have the

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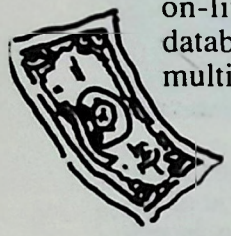

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CASE STUDY #1

Bruce Kamm: Metro On-Line

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To see what's going on at the Metro On-Line, use your modem to call: 212/831-9280, (8/1/N).

CASE STUDY #2

Gary Clarkson: The Talk Channel

Gary started his bulletin board system at home while still employed full time. Soon, he was making so much money that he quit his job.

Now he has three employees and a network of affiliates that serve 34 major cities throughout the US and 8 countries worldwide via a multi-user, multi-interest bulletin board system called The Talk Channel.

To see what Gary has done with his system, use your modem to call: 818/506-0620, (8/1/N).

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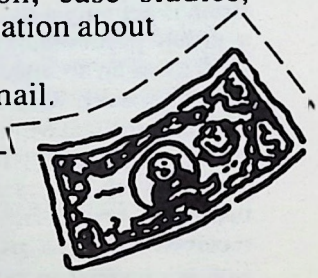
Demonstration disks, full documentation, case studies, a comprehensive "how to" handbook, and information about the On-Line Store's exclusive "instant business" add-on modules will be rushed to you via return mail.



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45,000 files available for download, but you can make some sense of them. The 48 directories appear on a very logically designed, if crowded, file areas screen and files within the areas are sorted out quite logically as well. There are a lot of large systems claiming a lot of files, but a large percentage of Channel 1's library seemed very current to us.

Part of this comes from their user base. We're not too sure why anyone would want to cough up what would be considered a pretty hefty subscription fee (60 minutes daily for one year is $85) and then spend their time uploading files. But a HOT UPLOADERS bulletin publicly recognizes the efforts of those that do. George Frena of Jacksonville Florida has uploaded a total of 2164 files to the system so far. Get a life George.

Most BBS operators face an awkward situation. On the one hand, they want to add subscribers who pay primarily for the privilege of downloading files. On the other hand, if another sysop subscribes, he will quite likely download a large number of files to post on his own competing system. This gives rise to some competitive, and at times nasty imbroglios between systems. Miller is philosophical about it. He sees shareware as a kind of universally available marketplace and not only doesn't fight it, but he's implemented a rather unique solution. If you want all the files in his directories, don't bother downloading them. He'll mail them to you. Files on 1.2 MB floppies are essentially $10 per disk. Even better, he will send you an entire directory on a Colorado Memory Systems tape backup unit tape cassette (DC2000) for $5 per MB.

Channel 1 even runs directory specials. The entire C Programming directory consisting of 700 programs occupying 40 MB is available for $99. Some of these directories are quite large: Word Processing - 1081 files/57 MB; Communications - 1586 files/72 MB. And some were surprisingly large for such narrow topics. His GOLF directory contains 632 files at 19 MB.

If you are starting a BBS and want to cover a particular area with a comprehensive set of current files, this may be the quickest way to get up to speed. To focus on Microsoft Windows support, for example, you couldn't hurt yourself picking up his 340 file, 21 MB Windows directory on tape to start off with. At his $5 per megabyte price, the directory would cost $105. At 2400 bps, it would cost $182.60 to download the same files long distance at night/weekend LD rates - never mind taking up 26 hours of your time. Even using a USR HST Dual Standard, it would cost over $30 and take nearly four hours.

The message conferences were likewise superbly organized. How DO you organize 250 message conferences from four different networks? Well, they take up several screens. And each conference listing is prefaced by a symbol. A legend at the bottom of the screen references symbols to networks. As a result of participating in more than one network, there are duplicate conferences - both a comedy conference and a jokes conference for example. But the diversity is intriguing.

Like many PCBoard systems, Channel 1 has encouraged the growing popularity in offline mail. Using programs such as QuickMail or EZReader, callers can dial in, download a .ZIP file containing all the messages from their personal selection of favorite conferences, and read and respond to individual messages offline. Later, they call back in to upload their responses. This cuts long distance charges dramatically and encourages leisurely examination of message areas.

In addition to subscriptions to the system, Channel 1 appears to be rather heavily involved in hardware sales. They offer modems, monitors, hard drives, and complete systems at some reasonably attractive prices. A USR Dual Standard modem was available at $899 and a Multitech 9600 V.32 at $685. In fact, the ATI 2400 with both MNP 5 and V.42bis was available at $225.

The system enjoys good activity. We were caller 723,000 plus. This would indicate a daily average of 495 calls over the four years of system operation going back to its beginnings as a two-line board. During the week September 1-7, 1990 they processed 12,155 downloads and 535 uploads - although undoubtedly the afore mentioned George was a big element in the last statistic. Again, there is a clear indication that George is in desperate need of either a lady friend or a lawn to care for - perhaps both.

The system has a chat door but we didn't notice a lot of activity there. According to Miller, most of his callers were focused on file downloads and message areas and consequently that's where he and Tess have focused their efforts. The system did feature an online survey that graphed some interesting statistical results about callers. A little over 94% were male, and 69% were between the ages of 25 and 50. Income was spread rather evenly from $20,000 to $75,000 per year. Over 40% spent OVER three hours per day online (George may have affected this stat too) and 88% used an IBM or compatible to do it.

It was interesting to note the relative popularity of communications packages with Procomm a healthy numero uno at 32%, Telix at 25%, and QModem gamering 22% of the crowd. The BBS crowd is clearly unimpressed with brand names in modems however. A total of 15% used U.S. Robotics, 12% Hayes, 10% Practical Peripherals, 9% Everex, and 49% opting for "other". Channel 1 seems to cater to this egalitarian view of telephone hardware. They have a 45-line hunt group but it is broken up into a wide variety of access entry points to accommodate specific modems. Access is broken up as follows:

CHANNEL 1 BBS

Public Access Main Number
(617)354-8873

Microcom 9600 - 4 lines
(617)354-6155

Hayes 9600 V.32/V.42bis - 3lines
(617)354-5776

U.S. Robotics Dual Standard - 6 lines
(617)354-2505

Multitech V.32 9600 - 3 lines
(617)354-8077

Telebit T2500 PEP/V.32 - 1 line
(617)354-0470

The remainder are generally ATI 2400 MNP 5/V.42bis lines. This eclectic collection of modems could almost be useful as a test bed for bouncing your new model off different brands to see if they would make the trip. The only problem with the scheme is that if all three Hayes lines, for example, are full, you would be bumped down the hunt group sequence to a different type modem than the one dialed.

Overall, we found **Channel 1** to be among the most capable big boards in the country. Clearly on the fast track, this system strives to offer something to everyone. The latest PCBoard implementation of ZModem and file scan features make finding and locating a file very easy. The offline mailers are developing daily to change the way we interact with message conferences. And Brian Miller and Tess Heder's plans to turn a BBS into a paying proposition seem to be very much on course. Miller estimates Channel 1 gross annual cash flow at about $120,000 annually. They plan to run 50 lines by the end of the month and in the future they would like to add such features as outbound FAX, and a link to MCI mail. Channel 1, P.O. Box 338, Cambridge, MA 02238; **(617)864-0100** voice.

OHIO SUPREME COURT LAW LIBRARY

The Supreme Court of the state of Ohio sports what is probably the finest law library in the country - rivaling even that of the Supreme Court of the United States. Founded in 1860, the library began a dramatic enhancement program about 20 years ago at the behest of then Ohio Supreme Court Chief Justice O'Neill. In 1974, Ohio built a new state office building on Broad Street in Columbus. The fourth and fifth floors were devoted to the law library which today houses over **300,000** volumes.

In November of 1987, the Supreme Court approved installation of a totally integrated online library system. The service was installed on the Ohio Data Network. ODN is operated by the Department of Administrative Services of the State of Ohio.

Several years ago, Northwestern University in Ohio had gone through a similar automation cycle. As a result, they developed a software system titled Northwestern Online Totally Integrated System (**NOTIS**). This was spun off as a for-profit wholly-owned subsidiary of Northwestern University also referred to as **NOTIS**. The **NOTIS** mission is to provide leadership to libraries who are attempting automation. The corporation has **82** employees serving **127** client libraries with annual gross revenues of **$6.2 million.**

The Ohio court library system is officially termed the Supreme Court Research Online Law Library (**SCROLL**). It operates, along with some other services, on two **IBM 3090** mainframe computers maintained by the Ohio Data Network. The **NOTIS** software provides the library card catalog online and numerous terminals are available in state offices.

The dial-up function is relatively recent. It actually went into operation on **July 30** after some fairly extensive testing and a reasonably dramatic opening ceremony, Chief Justice Thomas J. Moyer presiding. The mandate of the court was that the law library be available to all legal professionals, citizens, and interested parties at no cost. Because the system actually runs on mainframe computers hosting other state data processing functions, security was a major consideration.

The solution was a dial-back system provided by IBM titled **DEFENDER II**. To operate Defender, you basically dial the system, enter an eight digit ID code and hang up. Defender then calls YOU at your registered telephone number.

We asked Jack Farnlacher, Systems Librarian, if this didn't pose some difficulties for the state in dealing with long distance callers. According to Farnlacher, the directive to make **SCROLL** available at no cost to all citizens was clear and they were not informed of any exceptions. If you call from Honolulu to access **SCROLL**, they will dial you back at no cost to you and the state of Ohio foots the long distance telephone bill.

Getting on **SCROLL** is a bit less than immediate. You must write or call for an application/information packet. You fill this out and mail it in and in return, they mail you a confirmation with your eight digit ID. To actually logon to the system, you must set communication parameters to a very unusual **7** data bits, **1** stop bit, and **ODD** parity **(7O1)** . The service supports 300/1200/2400 bps connections.

The easiest way to deal with DEFENDER II is to enter the eight-digit ID code as part of the dial string with commas for delay. The telephone number of the service is **(614)644-7900**. To logon, enter the following Hayes AT command set string: **ATDT 16146447900,,,,,,,,XXXXXXXX#,,,,,#** where **XXXXXXXX** is your eight-digit account code. The service will answer and with an automated voice response ask for your account code. After the comma delay period, your system will transmit the code terminated with the # symbol. The system will repeat your code and the second # symbol confirms.

At this point you want to hang up the modem **(ATH0)** and put it in answer mode with the **ATA** command. Defender-II currently has seven dial out lines. If all are busy, you will be put into a dialing queue. Assuming a clear line, Defender-II dials YOUR modem at the number you supplied on your application. Your modem answers and in this way the connection is made. Wait ten seconds and press **ENTER**. A terminal emulation screen will appear. The system uses the **IBM 3708 Network Conversion Unit** to service a variety of terminal types.

Eventually, you will reach the Ohio Data Network banner screen. At this point key in **notis** and press **ENTER**. The message **Your request has been accepted** will appear. Wait a few seconds and press **ENTER** to enter the system.

The library holds **250,000** books and **60,000** microfilm records dealing with law. The **NOTIS** system currently has **170,000** records including **40,000** bibliographic citations, **41,000** holdings, **26,000** authorities, and **63,000** other items. Searches may be performed by author, title, subject, or keyword. A search result index displays title, date of publication, color code, location, and call number of each title matching your search criteria. A bibliographic record for one of these entries will list author,

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PRESENTS

The all new **Message Manager** for TBBS/TDBS systems. This program is the creation of Ben Cunningham, one of the pioneers in writing programs for The Data Base System (TDBS). Some of the highlights of this package are: Support for up to 10,000 message areas; SysOp configurable full screen editor; SysOp configurable reply quoting; the capability of editing messages after they are saved; the ability to perform **any** kind of maintenance while the BBS is on-line; the ability to import and export text while the BBS is on-line; users can change several message reading options at any time and save them to disk to make the changes permanent; users can subscribe to up to 60 message areas and see all the new messages in each area when they enter the message menu; message areas can be made to be anonymous (user name not in message headers); message areas can be configured to be auto-addressing (i.e. all original messages are sent to a specified name); complex and/or search capability on any combination of FROM, TO or SUBJECT fields; message text can be searched for strings; users are automatically notified of messages waiting at log-on or upon entry to a message area; carbon copies are supported; software uses unique transparent message threading; FidoNet format message import and export utilities are now being developed, etc. This program will be priced starting at $179.00.

The extremely popular game of **StarQuest.** This is the first multi-player, multi-user space game to run under TBBS/TDBS. You can create a universe of a size that is best for your system and its users and your users create and capture settlements and become active wheeler/dealers across your universe. Their settlements can be attacked and captured whether the user being attacked is on-line or off, and as the users gain in strength and worth the computer controlled pirates and the tax assessor will be there to lend a helping hand. This on-line multi user game has already proven itself to be popular with the users and it's not only a lot of enjoyment for them but it can quickly pay for itself on systems charging for access. This program is priced at $149.95.

The powerful and productive **On-Line Sales Manager.** This on-line catalog sales program is written by Jeff Johnson, another pioneer in TDBS software, and it easily shows the power and capabilities of TBBS and TDBS. The Sales Manager will display a catalog of items for sale under categories you specify, each item can have a full descriptive text file attached to it and the user can place an order at any time and continue to browse through the catalog. When done the user selects to order and is presented with each item and given the opportunity to indicate how many are to be shipped. Once all items are ordered the software will check to see if the customer has an account, if not it will prompt for all necessary order information. Developed as a modular package this software will handle everything from a low level order entry system to a fully featured point-of-sale package that will print invoices, track inventory, track billing and do all the things you would expect of a full sales package. It really must be seen to be appreciated. This package starts at $395.00.

There's a lot more available for the TBBS/TDBS SysOp, as well as for anyone interested in an Information System (BBS), all you need to do is call our system and browse through Our Demonstration and Sales Area and take the time to register as a customer. GW Associates offers full support to all SysOps and we have several excellent programmers available to help with your applications and customization. Please call our system at (508) 429-1784 (N,8,1) and keep up with our new releases or call us on our voice line at (508) 429-6227 if we can help you in any way. Installing commercial systems is our **ONLY** business, and we're good at it!

TBBS/TDBS/TIMS SUPPORT * TBBS/TDBS/TIMS SUPPORT * TBBS/TDBS/TIMS SUPPORT * TBBS/TDBS/TIMS SUPPORT * TBBS/TDBS/TIMS SUPPORT

title, publisher, physical description, notes, subject headings, and again the location/color/call number.

Scroll is available weekdays from 7:00 AM - 10:00 PM, Saturday from 9:00 AM to 10:00 PM, and on Sunday from noon to 10:00 PM. You can obtain an application by calling **(614)466-4442** or writing Supreme Court of Ohio Law Library, 30 East Broad Street, Columbus, OH 43266; **(614)466-1559** fax.

MICROSOFT PRODUCT SUPPORT BBS

Microsoft Corporation began experimenting with product support by BBS this past August with the **Microsoft Product Support Services Experimental BBS** operating at **(206)646-9145**. The system operates from their Bellevue Washington product support center.

The system is strikingly boring in all respects save one - it uses some rather unusual BBS software titled **MAGNUM BBS Version 2.03C9** developed by Gilmore Systems. The notable thing about this software is that it runs under Microsoft's OS/2 operating system protected mode - we haven't run across too many BBS operating under the **OS/2** operating system. The software seems capable and access at **9600 bps** is available.

Perhaps because it is new and experimental, the system itself is rather starkly barren. At one time, software companies justified asking **$400** or **$500** for what is essentially a book and a piece of mylar plastic by noting the substantial costs of providing support. Microsoft has been successful enough in marketing software to drop this pretext entirely. They've forged new ground in developing new and exotic ways of charging their customers for product support on products already purchased. They have the **900** telephone service to support DOS and for other products they have several rather pricey online services where you can get product support information by modem - for a fee. This one foray into BBS, which they are quick to warn you is experimental, offers some application notes and printer drivers for download. Despite the inviting title, users are specifically warned the operators will answer no technical questions whatsoever and the system refers you to a voice support line at **(206)454-2030**.

That said, the board does operate in a kind of cold, efficient, Teutonic manner and they do provide application notes for Microsoft Word, Microsoft Works, Flight Simulator, and Multiplan. We saw a scant handful of interesting and useful items such as one on using Flight Simulator with the MAX YOKE input device. This is a third party "joystick" that looks like an airplane steering wheel (yoke). Printer drivers were provided for such exotic printers as the IBM Proprinter and the Brother HL-8E. I'm not a big fan or user of either Word or Works, but I find it a bit tough to believe they don't provide support for either of these "unusual" printers in the basic software package.

There are no message bases other than one to leave a comment to the system operator - which we were warned must be about the system and not contain any software or technical questions.

Software companies across the industry are finding they can take a considerable load off their voice support function by using BBS systems to answer the most frequently asked questions, provide application notes and printer drivers, and provide messaging forums for users to post questions that don't really require immediate answers. On some systems, companies find that other knowledgeable users actually join in providing product support by answering many questions themselves. To some degree then, a BBS system allows their customer base to "self support" in a technical sense by forming a type of electronic user/support group.

Further, user input from this medium is incredibly easy to collect, sort, summarize, quantify, and use. It is much more empirical to note precisely 324 negative comments concerning the pink and green default screen colors with three very positive comments on same when all are conveniently stored on disk with data entry performed by callers.

We confess some disappointment that one of the leading software companies in the industry has offered so little so late in the way of a BBS. On the other hand, we have to be pleased to see them finally up with a system. And note that this is still an experimental "toe in the water" for Microsoft. This isn't Wild Bill with BASIC in plastic baggies any more. There is, after all, a 5500-man

bureaucracy requiring authorizations, approvals, memos, a bit of empire haggling, etc. now to support before a BBS can be properly launched. With a bit of time and development, this BBS could eventually be brought to full service. And since we have three readers who have already converted to OS/2 (well one of them is still experimenting but he MAY convert), we'll be looking into the MAGNUM BBS software further. Scott J. Honaker serves as system operator. Microsoft Product Support Services, 11245 SE 6th St., Bldg. B, Bellevue, WA 98004.

HARVARD UNIVERSITY ONLINE LIBRARY

Harvard University has grown to a sprawling entity housing schools for business, medicine, law, as well as a number of other subjects. An enormous library system within Harvard serves the academic community with over a 100 individual major libraries and numerous sub-collections located primarily in Cambridge and Boston Massachusetts but with satellites as far away as Italy.

To provide some access to this collected treasure of information, Harvard installed an online bibliographic service titled **HOLLIS** - Harvard On-Line Library Information Service in Cambridge. The system operates at **(617)495-9500** using **7** data bits, Even parity, and **1** stop bit (**7E1**). **VT-100** terminal emulation works well with the service.

HOLLIS is easily accessible with no registration and no user fees. The service provides bibliographic citations on an immense treasure house of information. The basic service is divided into three primary databases, the Union Catalog of Harvard Libraries, the Catalog of Older-Widener Library Materials, and the Guide to Harvard Libraries.

The latter database actually provides information on the individual libraries themselves. By entering the name of a library, or a keyword such as **LAW** or **MEDICINE**, you can call up records on individual libraries within the system. The records give the library name, various reference telephone numbers, hours of operation, physical location, and the name of the librarian in charge of the collection.

Each informational screen is accompanied by a menu guide at the bottom of the screen noting functions available. The system operates using typed commands rather than functional keys but they are extremely rational, easy to remember, and well described. A context keyed **HELP** function makes the system remarkably easy to use.

The catalog databases provide bibliographic information on volumes in the library. You can search these databases by author, title, subject, medical subject, keyword, call number, ISBN, ISSN, music number or government number. We tried a sample search and found the system to be the easiest to use online library we've seen anywhere. System response was startlingly swift.

For example, to search for titles on the subject of the Philippine Islands, we entered **FIND SU PHILIPPINES**. An index display of **1049** "hits" came up as soon as we released the **ENTER** key. Item **530** described a book published by the Philippine National Museum on history prior to 1521. We entered **DISPLAY 530** for a full bibliographic citation listing author, publisher, size, number of pages, location, call number, etc.

The deadly inertia of almost all areas of government, education, and large industry is continually discouraging. Public education, and many government agencies lag sadly in adopting online technology. For some reason, our nation's public and university libraries are an outstanding and at times even exhilarating exception to this. Libraries across the country are automating their card catalogs via free, eminently usable online systems with remarkable technical and administrative savvy. Given that they undoubtedly have their own bureaucracies and inertia to deal with, they illustrate very clearly that online automation can indeed be accomplished by large organizations. We salute the librarians across the country who are doing such a superb job of this, demonstrating graphically that not all tax dollars have to be wasted. Library administration is an area of true professionalism that teachers and government administrators would be well served to at least try to emulate.

Harvard University is of course a private school but still an immense organization. The **HOLLIS** system is clearly a superb research resource and generously made freely accessible to the public. We're most pleased to add it to our list of selected services. Our highest recommendation. Harvard University, Office for Systems Planning and Research, Widener Library, Room 88, Cambridge, MA 02138; **(617)495-3724.**

BBS FOR "OPEN COLLAR" WORKERS

by David Hakala

United Home Offices, Inc., is a national association for home-based workers. The association maintains a PCBoard BBS at **(718)898-5107**. The message areas include national conferences on computers, women's issues, arts and legal matters. File libraries are refreshingly selective and up to date. The UHO BBS also offers an online referral and resource database for its members. These databases include members with products or services for sale, and sources of information or assistance for small businesses.

While UHO has a BBS, its main activities seem to be focused offline. Members meet in person each month, and UHO will display its benefits in a booth at the Home Office/Small Business Conference and Expo: October 27-28, Meadowlands Convention Center, Secaucus, N.J. This event is sponsored by Home Office Computing magazine, and is expected to draw about 25,000 visitors.

UHO provides three levels of benefits for members. "Basic" membership costs **$25.00** per year, and includes the paper newsletter, "Home Run," membership in a discount office equipment club and group health, dental and life insurance for home-based workers, their families and employees. For $70.00, members or nonmembers can be listed in the BBS referral database. Finally, annual access to the BBS sells for $55.00 per year. Each package is offered a la carte; the total comes to $150.00. United Home Offices, Inc.: 88-43 62nd Drive, Rego Park, N.Y. 11374. Modem:**(718)898-5107.** Voice:**(800)662-7675**, in New York **(718)779-0993.**

SHAREWARE NOTES

SHAREWARE AND THE CRIPPLEWARE CONTROVERSY

We recently tried to review a shareware communications package titled **Unicom** that purported to take advantage of the new **Windows 3.0** environment. As it turns out, it was actually of Windows 2.0 vintage hastily rewritten to run under Windows 3.0. But that wasn't our main problem with the package. The program purported to be shareware and is available for download from a number of BBS systems. Unfortunately, it was a "crippled" version entirely nonfunctional for our testing purposes. It was limited to **1200 bps** operation. Since one of the major questions regarding communications software under Windows is whether it will perform background operations at high serial port speeds, testing the product became a useless exercise.

Many shareware products have a solicitation screen that appears whenever the program is started. Registered versions usually do not offer this screen. Unicom has three or four of them and they appear sequentially not just when starting the program, but each time you access any important function of the program. In attempting a download using the program, the BBS actually timed out while we read through three screens of all the dire things that would befall us if we did not register the product during the specified 21-day trial period.

The shareware software distribution method was started by Andrew Fleugleman (PC Talk) and Jim Button (PC-File) in the early 1980s. Even at that time the startup costs to bring a commercial software package to market had risen to the point that many talented developers had no avenue to distribute their software. As a result, they had the choice of either giving it away by ceding it to the public domain or not writing any. Fleugleman decided to try another avenue. He would give it away AND ask for donations from those who found it useful. Shareware was born.

And it was born at about the same time that electronic bulletin boards began to spread. You could argue for hours whether shareware was what caused the popularity of bulletin boards or whether bulletin boards were what caused the popularity of shareware. The relationship is somewhat integral and certainly symbiotic. Everyone seems to win up to a point. BBS operators can assemble collections of shareware to make available to their callers and so become attractive to those callers.

Callers gain access to literally tens of thousands of programs that might otherwise have never been available to them and can actually try the software out in realistic ways before purchase. This addresses a real problem in purchasing software. Commercial titles tend to be expensive. And no matter how many glowing reviews you read and the undoubted popularity of a specific software title, it may not be right for you. Who among us doesn't have a few **$300** shelf queens that just didn't survive on the hard drive? Sure Word Perfect is the most popular word processor. I can't stand it. Every time I look at the **$245** box of paper sitting uselessly on the shelf I cringe. Likewise Sprint, Multimate, and about eight or ten others.

Shareware enriches the flora and fauna of available software in other ways as well. The costs of bringing a commercial software product to market simply preclude the development of useful utilities that have a narrow scope of function. Thom Henderson's **ARC**, Phil Katz's **PKZIP**, Vern Beurg's **LIST**, and Chuck Forsberg's **ZMODEM** have proven over time to be valuable and popular additions to our computing efforts. The entire genre of communications programs came to being in the shareware world. Most commercial comm programs were, and still are, generally paler versions of the excellent titles in the shareware arena including QModem, Telix, Commo, and of course, Procomm. Had they to depend on commercial software distribution to fund their early development, they simply would not have happened. The costs to market narrowly focused utilities simply preclude their production commercially.

For software developers, shareware provides a number of advantages. The distribution and advertising medium is entirely free of charge. It's not that it doesn't cost much to advertise and distribute their products, it doesn't cost anything. The BBS world will take a truly useful and well done package and spread it coast to coast on **10,000** systems within a few months. A number of commercial software developers got their start in shareware, or, if you prefer, a number of shareware developers became commercial software developers.

DataStorm Technologies became an enormous success with their Procomm communications package - it's now distributed commercially. Bob Wallace's PC-Write, Jim Button's PC-File, and most recently, Thom Henderson's ARC have gone to commercial distribution. They were able to do so because they built organizations and improved their software funded by shareware registrations. The myth that shareware doesn't work for developers simply isn't borne out by history. There are a number of millionaires who did it through shareware.

The most famous case in point is of course DataStorm Technologies and their immensely popular Procomm communications package. This was little more than an idea a few years ago. Today, they market a slick commercial package including the pretty box, documentation, and the Procomm communications program at **$119.00** list price. They are on virtually every shelf in the country. They have 45 full time employees in Columbia Missouri. On September 8, they threw a party they termed **"Miracle in a Cornfield"** celebrating their success. Two thousand faithful were entertained with balloon rides, camel rides, a pig race, cherry schnapps snow cones, and what one participant described as the biggest drunk he'd seen thrown in sometime. A DataStorm band, made up of employees, did a remarkably good job of putting the crowd into motion. One of the founders has discovered auto racing and now owns nine Porsche's. And a test drive version of the program is **STILL** available as shareware. The features missing in the shareware distributed version **PCPLUSTD.ARC** (essentially full keyboard re-mapping) are trivial. A commercial version gave them a pretty box to put on the shelf as another marketing avenue for an excellent piece of software. They operate a support BBS, and still maintain a fully shareware

product in **Procomm Version 2.4.3**. For many, particularly newcomers to the modem scene, it IS worth a hundred bucks or so to get a nice box, some good documentation, and essentially a start on getting online. You'll be very hard pressed to convince these people that "shareware doesn't work." An upgrade to the program to include the **ZMODEM** protocol is due this month.

The biggest criticism of shareware comes from the developers who failed to make it in the market. As in every success pyramid in any field, there are those at the top - the super stars. There are those in the middle who enjoy some varying level of success. And there are those at the bottom who just didn't make it. Rock and Roll stars, novelists, film makers, all enjoy the same harsh road to success. We would posit that the surest way to success in shareware is to produce a truly valuable and useful piece of software. Those who fail in shareware should look to their own products first if they need a devil to blame.

Then too, those individuals with a flair for business and promotion seem to do best in shareware as they seem to do in all other fields. Marshall Magee built Magee Enterprises into a million dollar operation on a capable, competent, but hardly inspired DOS menuing program titled **AUTOMENU**. It works as advertised, it does fill a need, but it falls a bit short of being "magic" in the sense of the many really technically elegant programs available in the shareware world. He's recently released a commercial C language utility to create screen windows easily in C.

But there are those who spend hundreds of hours programming their little hearts out to produce what they feel is the best program in the world. They upload it to a few local bulletin boards and sit back to watch the checks roll in. They see the program available on hundreds of boards and have some indication that individuals are downloading it and trying it. But the flood of checks turns out to be a scant five or six in the first few months, and they immediately become discouraged.

There are several reactions here. One is to bitterly proclaim that "shareware doesn't work". A second is to go back to work improving the program. This is often the most effective for several reasons. One of the elements inspiring users to register their shareware product is the prospect of "belonging to the club". In a sense, if you register a shareware product, you are helping fund further development of a software program you think deserves a place in the market. You become a welcome member on the support BBS, your input as to new features and improvements gains much from being one of the "paid" members, and you may become one of the early adopters who become knowledgeable on the product and help others in learning to use it. When the shareware world sees a new title, the big question is "what's going on with it". If the author has dropped off the face of the earth, there is no support BBS, no rumors of new releases and new features being added, why send a check off into space?

Further, many developers view the BBS community as a medium where news spreads like lightning through the grapevine. Our experience is more one of tossing pebbles into a pool. The waves spread slowly in an ever widening circle. And there are several thousand others tossing their pebbles into the pool as well. Where, and how well your particular wave washes up on a shore somewhere determines your success. There are at least **50,000** current shareware titles available for the IBM PC. It can often take two to three years to build a shareware product into strong positive cash flow.

The other reaction is to cynically develop a means to "force" all those freeloaders to register. The concept is to release a distribution version with certain functions disabled or crippled. Users who like the program and use it are in theory forced to register it to enable the crippled functions. Despite all plaintive claims to the contrary, the biggest argument against crippling is that in the long run it simply doesn't work. The vast majority of users simply delete a program, all other merits aside, if they have to deal with crippled functions. Many BBS operators will not carry crippleware online and the Association of Shareware Professionals, a group representing shareware authors, specifically denounces the concept of crippled functions as an inducement to registration. Most importantly, the developer is setting up an adversarial relationship with the people that can most help to make their product a success. And it doesn't take a genius to note that NONE of the success stories in shareware have used this ploy.

Many people within the shareware community have absolutely no concept of how it really works. Those that do, tend to do rather well. Basically, the biggest problem ANY business faces is getting the word out about their product. With the thousands of products available in our consumer society, the level of "noise" generated by millions of advertising messages is just overwhelming. To get your product message to stand out through all that is an awesome task.

Most commercial software developers don't even consider it a trade secret. They'll tell you straight up that **90%** of the software purchased in this country is purchased by businesses - large and small with the majority of income coming from the large ones. What they cannot publicly admit is that software piracy by individuals contributes to that success in marketing to businesses. Successful shareware developers will tell you the same thing. Procomm, contrary to myth, did NOT become a financial success based on all the thousands of enthusiastic BBS callers that sent in their checks. If you examine the regular BBS callers, they will typically only have three to five shareware packages registered - and many have the SAME three to five packages, out of the available **50,000** registered. Most knowledgeable sources indicate that less than **3%**, and some estimates indicate perhaps **1%**, of the users of any one shareware package register the program. Note that this is actually about the same response they would get from a very well targeted and successful direct mail campaign.

Even then, if you assume a conservative **3 million** active BBS callers, and assume **1%** of them have ever seen your program (**30,000**), and assume **1%** of those register, you could conceivably come up with perhaps **300** registered users in a year with a good piece of software. And it will most likely take a year of active effort to promote a new shareware title. The really successful ones built a following over a three to five year period. Assuming a $35 regis-

tration, few would be doing it for the **300** users which create a total take of a little over **$10,000.**

So how do the shareware "stars" make the big bucks? Most of them see the world a bit more realistically. If you approach shareware distribution from a little bit different perspective, some encouraging things come to light immediately. Since most software is purchased by businesses, you would want your product to be useful to businesses. Automenu, Procomm, and QEdit have been big favorites with corporate America. Games dramatically less so. I still recall seeing a big BOX of QEdit manuals delivered at Martin Marietta Denver Aerospace. Their point of view? It was a good editor. It only cost $35 and less with a site license. If that's what the programmer's like anyway, get a copy for each PC work station.

Many developers see a network of **14,000 BBS** as the vehicle to get to a potential market of **3 million** callers. Successful developers see the **14,000 BBS** as a way to get to the **3 million** callers who then become salesmen for their product through the back door of corporate America. Very few people call BBS professionally. Most do it as a leisure-time diversion. Come 8:00 AM, they are on the job at some business somewhere. If they use computers at work, as well as at home, they have a natural tendency to bring in the programs they actually find useful to use on the systems at work. For any number of good and varied reasons, businesses seek some control of the software used on their machines. If they find a program keeps cropping up that was not purchased through normal channels, they will inevitably take notice. And many individuals within a company take some pride in demonstrating their knowledge of the PC world by pointing out that their favorite **$35** editor, word processor, or communications program actually outperforms the **$300** per copy "approved" commercial product. Since the main idea in business is to spend the least while making the most, savvy companies have become attuned to this type of employee input.

The fact is that most of the actual income Procomm, QEdit, PC-File and PCWrite did receive as shareware products came from corporate purchases and site licenses - not the **1%** or so of BBS callers who registered their products. The registered callers are who they listen to most intently when planning new features - essentially their beta test sites. When the name recognition reached a point where they could market it directly, and they had the resources from shareware registrations to do so, they did. The BBS callers were the advertising medium and test group, not the market.

The only argument proponents of crippleware seem to be able to martial is that it is their software and they have the right to do with it as they wish. This is arguably true but not really pertinent to the discussion. They may even force a handful of registrations using this technique, but generally, they're taking a strong step toward killing their chances of long term success. More importantly, they are seeking to take advantage of BBS distribution without honoring the concurrent obligation to provide fully functioning software. They are seeking to convert the symbiotic relationship between shareware developers and the BBS community to a parasitic one.

The paradigm of shareware software available on BBS is relatively mature. Callers, finding a title listed in a file directory of shareware, have some reasonable expectation that if they download a title from that directory, often at some expense in long distance connect time, that it in fact be a shareware product and not a crippled demonstration version of a software program. Software developers do have the right to "do what they want with their product". But in crippling their software, they morally give up the right to use the BBS community as an advertising medium. They are committing fraud and deception by uploading the program to any BBS other than their own support system.

We would urge BBS operators to remove crippled software from their systems entirely. Failing that, we would urge them to clearly mark the programs as DEMO software. Callers should not be misled into the time and expense of downloading a program only to find that it doesn't live up to expectations by the deliberate design of the developer. We would urge callers to simply send these obnoxious titles to RAM heaven where they belong without further thought or consideration. If you have to pay for it before you use it you might as well get the pretty box and documentation down at Software Etc. And we would urge shareware developers to either release fully functional versions of their programs, with clear but discreet license and registration information, or find another advertising medium.

SHAREWARE ASSEMBLER PROGRAM

Criticizing someone's favorite programming language or word processor is a bit like asking him why he married **THAT** woman. No matter how carefully you phrase your comments, they will inevitably be poorly received. And note that in order to save my own marriage, I vowed **NOT** to write any more programs for publication several years ago. But after reviewing Eric Isaacson's excellent assembler package, I'm moved to words on the forbidden subject.

In the first place, I come to the land of computers from the hardware end. As far as I'm concerned, any particular programmable electronic device has but ONE programming language - the one designed into the hardware by the designer. In the case of the IBM PC and equivalents, this is the instruction set provided with the 8088/80286/80386 microprocessor designed by Intel Corporation. It is not that this instruction set is the "best" programming language, it is the only one available for these machines.

There may be any number of useful utilities to assist the programmer in "assembling" and testing software programs in this language, but there remains one language. Assemblers, disassemblers, debuggers, etc. all fall into this category. And all retain a one-to-one direct relationship between what the programmer enters into his text file and what instructions are executed by the microprocessor.

BASIC, Pascal, and the venerated C programming languages aren't programming languages at all. I'm tempted to say they are happy tools and busy boxes for geeks but that would get me some mail wouldn't it. In one sense, they could be considered extensions of convenience in the spirit of such utilities as assemblers, debuggers and their associated mnemonic assembly language. But while assemblers retain that one-to-one relationship with the native instruction set, the higher level languages do not. At compile time, each programming statement is replaced with what is essentially an entire subroutine of machine instructions designed by whoever wrote the compiler. Worse, this subroutine must include whatever code necessary to accommodate any options available for that programming statement. In becoming generic enough to handle the accommodated generalities, the subroutine becomes a bit swollen with garbage for any specific use.

As a result, ANYTHING produced by the higher level languages is inherently many times less efficient than the same task written in assembly language. Let's make a bold statement to drive this point home without undue exaggeration. Horribly mangled assembly language programs, written by morons who could just barely bark if they could only gain three IQ points somewhere, if they work at all, will always be faster and smaller than even excellent C, BASIC, or Pascal programs written by geniuses to perform the same task.

The higher level languages were developed by assembly language programmers that just never tire of developing more powerful utilities to aid their programming. In the case of both BASIC and Pascal, they actually wrote the languages so it would be easier to teach other people to program (BASIC) or to teach others to program they way THEY thought it should be done (Pascal).

By far the majority of programmers use the C language today to develop software. The popularity of this language is just astounding. But there are still a handful of hardcore faithful who continue to tinker with extremely small, blazingly fast programs that not only do the impossible but do it right now in assembly language.

The latest thing we've seen is a program floating around in ASM source code to emulate the Apple II computer on an IBM compatible 80286/386 machine. Written by Randy Spurlock of Compaq Computer, this program has sent dozens of ASM tinkerers digging through their closets to find old Apple II programs they can run with abandon on their IBM machines. By all reports from those who've tried it, the emulator works flawlessly. Getting the programs from Apple disks into the IBM machine requires a bit of RS-232 work but these guys are having a ball. We've seen the file as both **APPLE.ZIP** and **APL2EM.ZIP**. It's a big hit with those dealing with a public educational system forever stuck in Apple II land. The program is available from Michael Cocke's **Hacker Central BBS** in Montville New Jersey at **(201)334-2555.**

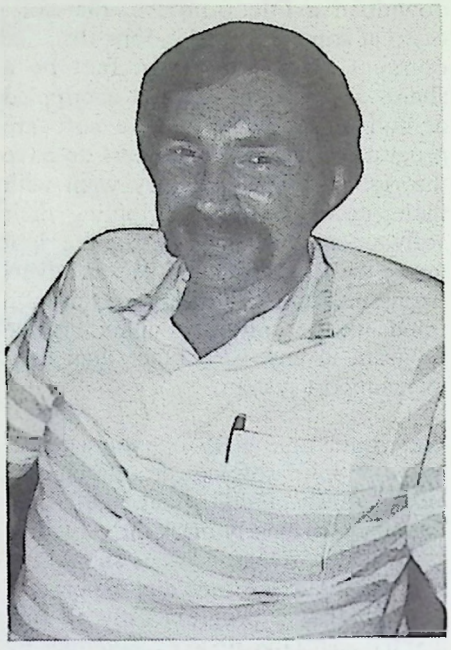
Eric Isaacson was an Intel employee during the early days of the 86 family microprocessor development. At Intel, he was part of a two-man team that developed the first **ASM86** assembler program. He's been programming since 1965 and he's supported himself and his family solely on receipts of his shareware programs **A86** (the assembler) and **D86** (disassembler/debugger) since 1987. He's also co-author of a book titled ***The 80386/387 Architecture*** published by Wiley and Sons. A86 and D86 have been in existence since 1984 and are currently in version 3.22 in the files A86V322.ZIP and D86V322.ZIP.

Isaacson, obviously a devoutly modest and self effacing man, claims that "***A86 is the finest assembler available, at any cost under any terms, for the 86-family of microprocessors.***" Bravado aside, after reviewing the package, we are unable to take him to task on the statement. **A86** can assemble up to **1000** lines of code per second and is benchmarked at about four times the speed of Microsoft's **MASM 5.1** assembler. Further, to assemble simple .COM files you can leave out all the **SEGMENT, ASSUME,** and most other declarations and **A86** doesn't stumble a bit. On the other hand, if you want to compile to **.OBJ** files to link **.EXE** programs, it will use them - or even fill them in if you forget. If it encounters errors, it will place reasonably understandable English error statements in your source file. When you recompile, it will remove them. The program supports very powerful macros, math co-processors, and libraries. The program is frankly amazing.

D86 allows you to examine ANY **.COM** or **.EXE** file and step through the program instruction by instruction. It displays all the registers, flags, and so forth while doing so. It makes the internals of your computer visible in quite graphic detail.

Either program requires a **$50** registration plus another **$10** for a printed manual. While most software development will continue in the C language, you may want to play around with assembly language to see how the big boys do it. Isaacson is a sometimes sysop of Indiana University's **PC-Link Central BBS at (812)855-7252.** This PCBoard system is actually operated by the University Computer Services at the Wrubley Computing Center, 750 N. State Road 46, Bloomington, IN 47405. T.C. Bradley is the primary operator but Isaacson has an area of the system devoted to support of **A86** and **D86** and swaps messages there. The files are freely available for download to new callers if you can remember a). Your name, b). Your address, and c). Your telephone number. Eric Isaacson, 416 E. University Ave., Bloomington, IN 47401; **(812)339-1811** voice.

Dr. File Finder'



dCOM DOS Shell Program

by Dr. File Finder

Microsoft's MS-DOS disk operating system can be intimidating to the novice user and a pain in the neck to the experienced one. As a result, programmers have been looking for a substitute that would increase efficiency while cutting down on the learning curve. The result has been a number of utility programs that allow users to use DOS from an easier and more visual interface. Quite a number of these DOS "shell" utilities have emerged over the years. Most of them, however, have only served to turn users against DOS shells in general. Directory Commander, or **dCOM**, by Dave Frailey, on the other hand, is one of the friendliest DOS shell programs around.

The initial concept of dCOM was to provide the hard disk user with a quick, convenient, easily-manageable means to move around through subdirectory structures, run programs, and perform housekeeping chores. Throughout its many versions, this concept has remained unchanged. The author, Dave Frailey, listens to what users want and constantly improves the program. dCOM is still a window into your hard

disk, capable of navigating around your system, changing directories, running programs quickly and easily and yet -- it has grown into much more.

dCOM's main screen displays directories and files in your root directory. Moving to another directory simply a matter of moving your cursor or pointing with your mouse to the directory of your choice. In a split second you are in the subdirectory with its files and subdirectories. From any of these screens, you can run files, read text files and edit them with the built in editor, delete directories whether they contain files or not, move directories, tag files for block copy, move, delete, printing, or attribute operations. Copying can span multiple target diskettes. Optional caching for floppy accesses to track 0 improves copying to floppy disks by as much as seven times.

You can sort a directory in a variety of modes including one with executable files first. You can see hidden and system files (which can then be protected with an access password). You can hide and rename individual files or entire subdirectories. You can even create a new subdirectory simply by moving files to it. dCOM will tell you that the subdirectory is new and ask if you want to create it. dCOM will even move an entire directory for you from one drive to another!

If you are like me and still like using DOS commands, dCOM has simplified that too. Simply by pressing the TAB key a DOS prompt appears at the bottom of the screen. Pressing TAB again will bring down the .EXE or .COM file you want to run, or you can type in a DOS command or the name of a TSR program to run. For example, press TAB, type LIST, press TAB again and a highlighted text file will appear next to the typed in LIST. Hit Enter and LIST will run and show the file you indicated. If you want to unpack three or four files, use the tagging feature of dCOM to tag the archived files, press TAB and type in the appropriate unarchiving program, TAB again to bring down all the tagged file names and ENTER.

If you prefer a menu-driven system, dCOM can provide that also. The program has it's own macro language even a novice user can learn. High-powered macros, similar to batch files, can be programmed and assigned to function keys. The first time run they automatically compile and "tokenize" to a memory buffer for instantaneous response times and efficient use of memory. All batch commands are supported plus an additional subset of commands like nestable IF blocks, DO blocks, looping etc. The menu mode can be configured to pop-up automatically and fully supports password protection for each selection or for access to dCOM's utility functions. In this way, you have access to everything in dCOM, but less-experienced users may be restricted to just menus.

dCom includes a high-performance, full-featured, multi-window, multi-buffer text editor with PC line drawing and enhanced video options. Buffer sizes are limited only by available memory. You can mark blocks, copy and move them, and lots more. In the utilities mode, a powerful visual tree which is fully mouse driven is available. dCOM also has full mouse support. Most file-oriented commands can be performed totally with the mouse. Fully configurable color, with snow inhibited automatically on CGA, and with support for EGA/VGA extended colors is an added attraction.

dCOM can run any file with a .COM, .EXE or .BAT extension. In addition, however, file extensions other than .COM, .EXE, or .BAT can also be configured as executable by having another program run and passing it the selected filename. One of the most outstanding features is a high-performance, resizeable print spooler with hot-keys for clearing the spooler's buffer, sending form-feeds, and sending line-feeds to the printer. Printer output for the system and the spooler is easily redirected to another LPT port or a COM (RS232) port. Some additional features are: a keypad "+" key which can be configured to emulate a Return key; a Screen Saver configurable from 1 to 59 minutes; and a hot-key that blanks the screen and locks the keyboard. If the system password is active, it is required to reactivate the screen and keyboard.

dCOM has an elaborate yet easy to use Alarm and Reminder feature. The extensive alarm clock system can hold 38 different alarms based on daily or calendar events. If you set a time for the reminder, an alarm box will appear on your screen at the designated time wherever you are, no matter what program you are in and will remain there until removed with the touch of a key. An optional activity log can keep track of every program run, when it started, when it stopped, how many minutes it was active, and what parameters, if any, were used. You can also set up a list of users, giving each the ability to access only certain functions in dCOM. The logging facility will also track who ran each program. This makes dCOM a

great program for use both in the home and in business. dCOM can use both conventional and expanded (EMS) memory. It is also compatible with both multi-tasking and task-switching software like DesqView, TopView, Back And Forth, and others.

In summary, dCOM is a full-screen, high-performance, interactive DOS Shell and DOS Utility. You can change directories, sort directories, execute, edit, print, copy, move, rename and delete files with a single correlating keystroke. You can selectively tag files or entire directories to be copied, moved, deleted, or printed. Subdirectories can be renamed or hidden. The copy command has the capability to span several destination diskettes when multiple files are involved. Directories can be sorted in many different ways. You can put all of the executable files in alphabetical order, right up front before other necessary files. Your files can be sorted based on filename extensions, date/time, or size - in either ascending or descending order. Hidden and system files can also be seen with the touch of a key. dCOM's user-interface provides you with a command set that is functional, making it easy to learn and remember. All destructive commands prompt for confirmation first before proceeding.

dCOM's extremely flexible and powerful macro (function) key facility give it power and flexibility that I have not found in any other program. Because the macros are compiled they execute almost instantaneously and no temporary batch files are used nor a second copy of COMMAND.COM invoked (unless programmed to do so, or a resident DOS command is used). The program has been so carefully thought out that if you load a TSR after dCOM, you can tell dCOM to remove the TSR when you return to dCOM, thus freeing up memory. With the macro keys, you can program dCOM to perform any of your most commonly used MS-DOS commands, run programs, change directories, compile source code, and more. The macro keys can be used to build extensive menuing systems. dCOM also includes a high-powered print spooler which tunes itself to your computer and printer, and can be resized or disabled at will. It is supported with a hot-key that will clear its contents and any internal buffer in the printer.

dCOM is a truly comprehensive program. It has a wide range of features and yet they are features that most users want. No fluff, no flashy things that you won't ever use, but good, solid, full-featured utilities and accessories. The program continues to get better and better and it works beautifully. You can look at a lot of programs, but you'll be hard-pressed to find anything that can compare to dCOM by Dave Frailey and DAC Micro Systems. This is one program that I personally, will not be without! Registration is **$50.00** plus **$2.50** shipping and handling and includes printed manual. Dave Frailey, DAC Micro Systems, 40941 176th St. E., Lancaster, CA 93535; Voice: **(805)264-1700** BBS: **(805)264-1219.**

BOARDWATCH MAGAZINE
Classified Electronic Bulletin Board Advertisements

Advertise your electronic bulletin board/online information service in Boardwatch Magazine. Let our readers know who you are and what you're doing with online technology. To order a BBS ad in the Boardwatch Classified BBS ad section, call the Boardwatch Online Information Service at (303)973-4222 and use our online ad entry system. In addition to standard list information, you may enter up to 255 characters of text describing your online service. - all for $25 per month. Master Card or Visa only.

THE PHASE IV BBS (201)727-7514 South Amboy NJ since 05/89. Sysop: Tom Snyder. Using TBBS 2.1M with 4 lines on MS-DOS 80386 with 250 MB storage. U.S. Robotics at 14400 bps. $0 None fee. The Phase IV specializes in GIF graphic files and GIF related utilities. Thousands of files available. Local message boards, Echo Conferences, Multi-Line Chat.

General Information Systems (GeniSys) 215-887-6600 Philadelphia, Pennsylvania since 04/89. Sysop: Robert Malerman. Using Galacticomm 5.11 with 17 lines on MS-DOS 80386 with 680 MB storage. at 9600 bps. $0.50 Hourly fee. Exciting - Multi Line Chat service! 15,000+ Files, Multi Player Games!, Special Interest Groups, and Much Much more! Call today for fast paced action. Starlink node 9581. PC Pursuit node PHLPA. WOMEN ARE FREE!!! Call now!

PC-OHIO PCBOARD 216-381-3320 Cleveland, Ohio since 09/85. Sysop: Norm Henke. Using PCBoard 14.5/U with 9 lines on MS-DOS 80386 with 1980 MB storage. U.S. Robotics at 9600 bps. $30 Annually fee. The Best BBS in America. Over 20000 ZIP files on-line. Each node a dedicated 286 or 386SX computer. Large Adult file section. ProDoor, ProBank, MegaMail and MarkMail doors. Free access for members of ASP. Call 216-381-2115 for USR HST DS.

Pinecliffe BBS (303)642-7463 Pinecliffe Colorado since 01/84. Sysop: Craig Baker. Using OPUS 1.13 with 4 lines on MS-DOS 80386 with 1200 MB storage. U.S. Robotics at 2400 bps. FREE BBS! (But for $20/yr get TWO HOURS PER DAY & NO DOWNLOAD LIMIT!) Lots of files, some oddball echomail conferences. Many online games & tournament! Sysop usually available for chat. 9600 bd HST line at (303)642-0703. Come help us grow!

Chicago Syslink TBBS 312-622-4442 Chicago, Illinois since 06/81. Sysop: George Matyaszek. Using TBBS 2.1M with 7 lines on MS-DOS 80386 with 80 MB storage. Multitech at 2400 bps. $20 Annually fee. Multi-Purpose System Catering To Business/Service Users.Online Chat Mode, Games, Magazines, National Echo Conferences, MicroMatch/Find A Friend, Voted as #1 BBS for IL. & #20 for USA. Call ANYTIME and have some FUN for a change!

The INDEX System TBBS 404-951-1540 Atlanta Georgia since 04/84. Sysop: Rodney A. Aloia. Using TBBS 2.1M with 3 lines on MS-DOS 80386 with 120 MB storage. Hayes at 9600 bps. Largest CoCo BBS in the Southeast, also a SDNet/Works! Member. Home of "Today/TDBS", "The Online Catalog", and other TEBS/TBBS applications. USA Today News. Both Hayes Ultra 9600 and US Robotics HST nodes.

Data Point! 501-442-8777 Fayetteville, Arkansas since 01/83. Sysop: Gary W Funk. Using TBBS 2.1M with 4 lines on MS-DOS 80286 with 260 MB storage. U.S. Robotics at 9600 bps. $30 Annually fee. Data Point! has multi-line chatting, on-line publications, and multi-player games. Large library of SDN, SDS, and TDN files. Support for MS-DOS, Commodore, and Amiga. TBBS/TDBS/TIMS and TMail support. NetWork, FidoNet, and UUCP message areas.

Cul-de-Sac Bar & Grill 508-429-1784 Holliston, MA since 03/85. Sysop: Pete White. Using TBBS 2.1M with 5 lines on MS-DOS 80286 with 380 MB storage. U.S. Robotics at 14400 bps. $45.00 Annually fee. The home of many TBBS/TDBS software packages, and an almost continuous beta site for many TBBS/TDBS software authors. Like Ben Cunningham's 10,000 message system with full screen editing and quoting, and Jeff Johnsons On-Line Sales Manager.

The Livewire BBS 609-866-2551 Mt. Laurel, New Jersey since 08/89. Sysop: Richard Paquette. Using PCBoard 14.E with 3 lines on MS-DOS 80286 with 400 MB storage. U.S. Robotics at 14400 bps. Features the LiveStore with 20+ Product Departments for On-Line ordering with Visa/MC. Home of: BBS Caller's Digest, The LiveStore, Discount Magazine Door. Boardwatch, USA Today, Info-Mat, Zip Beep and Business Sense. 80+ Doors, Games, Conferences.

GLIB - Gay & Lesbian Information Bureau 703-578-4542 Washington, DC since 06/86. Sysop: Jon Larimore. Using TBBS 2.1M with 15 lines on MS-DOS 80386 with 720 MB storage. U.S. Robotics at 14400 bps. $35 Annually fee. GayWay To Your World. Free to members of gay community groups. GayCom National Network. Computer SIGS, ShareWare, current news, info files, support services. Live real-time chat. PC Pursuitable. StarLinkable.

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - OCTOBER 1990

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
Access LA!	(818)358-6968	Adult Multiline Chat System - Games - Magazines - Downloads	Michael Allen	Monrovia ,CA
ADA Information Clearinghouse	(202)694-0215	Information on ADA Programming Language/Military Specs	Department of Defense	Washington ,D.C.
ANARC BBS	(913)345-1978	World Radio/TV Handbook - Short Wave Freq Lists/Scheds.	Assoc. of North American Radio Clubs	,KS
Applied Modeling Research RBBS	(919)541-1325	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills ,NC
Aquila BBS	(708)820-8344	2 GB 9 Nodes Fidonet/Interlink/Metronet MCe IL/CHI	Kevin Behrens/Steve Williams/Chris Babb	Aurora ,IL
Ashton-Tate Technical Support	(213)324-2188	dBase and Multimate Support - CIS HOST NAME:ATBBS	Ashton-Tate Corporation	Torrance ,CA
AST Technical Services BBS	(714)727-4723	Superb support system for AST Computer Products	AST Research Inc.	Irvine ,CA
AT&T Support BBS	(201)769-6397	Support for PC 6300 and Other AT&T PC Models	American Telephone/Telegraph PC Division	Plainfield ,NJ
Audiophile Network	(818)988-0452	High-end Audio Components, Music, Video Reviews	Guy Hickey/Quatre Speakers	Van Nuys ,CA
Automobile Consumer Services	(513)624-0552	New Car Pricing Reports - Used Car Value Reports	Automobile Consumer Services Inc.	Cincinnati ,OH
Baud Town	(818)893-0340	Relaxed, Friendly Social BBS- USA Today/Newsbytes/Boardwatch	Linda Saenz/Fred Gernand	Granada Hills ,CA
BBS Press Service	(913)478-9239	Home of INFOMAT Online Weekly PC News Magazine	Alan Bechtold/BBS Press Service	Topeka ,KS
BellSouth's TUG Gateway	(404)594-3964	Transtext Universal Gateway - Atlanta Journal-Constitution	BellSouth	Atlanta ,GA
Best Friends BBS	(714)832-5902	DLX Multiline Chat/Match Social/Sexual	Ann and Joe Wiseman	Fountain Valley ,CA
Big Peach BBS	(404)446-6650	Home of Automenu and Treeview Software	Marshall Magee/Magee Enterprises	Norcross ,GA
Big Sky Telegraph	(406)683-7680	Education/Econ Development info to Montana rural Communities	Montanna Rural Education Network	Dillon ,MT
Bit Bucket Software BBS 104/501	(303)693-4317	Home of BinkleyTerm Mail Software	Bob Hartman	Aurora ,CO
BMUG BBS	(415)849-2684	Support for Macintosh owners - files - conferences.	Berkeley Macintosh Users Group	Berkeley ,CA
Book BBS	(215)657-6130	Information on 2000 Computer Books - 800 order number	Business & Computer Book Store	Willow Grove ,PA
Brown Bag Software BBS	(408)371-7654	Power Menu/ PC Outline Software Support	Brown Bag Software	Campbell ,CA
Bruce's Bar & Grill	(203)236-3761	24-line Social System - Chat - Games - Downloads	Bruce Lomasky	West Hartford ,CT
ButtonWare BBS	(206)454-2629	PC-File dB / PC-Calc / PC-Type Software Support	Jim Button/ButtonWare	Bellevue ,WA
C.A.R.L Library Service	(303)863-1350	Citations to 2 Million Texts in Colorado Library System FREE	Colorado Alliance of Research Libraries	Denver ,CO
Castle Tabby 107/412	(201)988-0706	Home of TABBY Fidonet Interface Program for Apple Macintosh	Michael E. Connick	Bradley Beach ,NJ
CatHouse BBS 206/2901	(805)395-0650	Multiline Support System for Wildcat BBS Software	Mustang Software	Bakersfield ,CA
Census Bureau Office Automation	(301)763-4576	Microcomputers and Office Automation	US Dept. of Commerce/Nevins Frankel	Suitland ,MD
Census Bureau Personnel Division	(301)763-4574	Employment Opportunities Within the Census Bureau	US Dept. of Commerce/Nevins Frankel	Suitland ,MD
Channel 1	(617)354-8873	45-line PCBoard System - 3.7 GB Files - 250 Msg Conferences	Brian Miller/Tess Heder	Cambridge ,MA
Chicago SysLink	(312)622-4442	Special Interest Areas for Ferret/Pet Owners.TRS80/Aviation	George Matyaszek	Chicago ,IL
Classi Computer Fieds	(317)359-5199	Online System for Classified Advertisements	Steve Edsall/Trader Newspaper	Indiannapolis ,IN
Clean Air BBS	(408)298-4277	Environmental Health/Cigarette Smoking Topics	American Lung Association/ Sheila Blash	San Jose ,CA
Cleveland Freenet	(216)368-3888	Cleveland City Information/Ohio Governor's Office Online	Case Western University/AT&T/Ohio Bell	Cleveland ,OH
COCONET	(619)456-0815	COCONET Support/Demo - Hires Graphics BBS for Unix Systems	Brian and Patricia Dear	La Jolla ,CA
Computer Business Services	(714)396-0014	Computer Columnist John C. Dvorak's office BBS	John C. Dvorak and Nick Anis Jr.	Diamond Bar ,CA
Computer Garden	(301)546-1508	Treasure Hunting - Metal Detectors - Online Catalog	Milford P. Webster	Salisbury ,MD
Computerized Bulletin Board Sys	(708)849-1132	First Electronic Bulletin Board - Creator of XMODEM Protocol	Ward Christensen	Chicago ,IL
Computing Canada Online	(416)497-5263	Adjunct to Excellent Canadian PC Newspaper	Computing Canada Newspaper	Willowdale ,Ontario
Corporate Data Exchange (CDX)	(609)683-4422	PR Newswire/ Business Wire. Logon: hello user.cdx	LaFountain Research Corp/Tad LaFountain	Princeton ,NJ
Crosstalk Communications BBS	(404)740-8428	Product Support for Crosstalk for Windows/MK4/XVI	Digital Communications Associates	Roswell ,GA
CTC IEEE Employment Database	(508)263-3857	Online Database of 20,000 Resumes for Engineering	Career Technologies Corporation	Andover ,MA
Cul-de-Sac Bar & Grill	(508)429-1784	Multiline Service - Ham Radio - Humor - Echomail - Games	Pete White	Holliston ,MA
CyLink	(719)520-5000	Online Chat/Multiplayer Interactive Games - 12 lines	Klaus Dimmler	Colorado Springs ,CO
Dante Project BBS	(603)643-6310	Commentary/Research on Dante's Divinia Comedia	Dartmouth College	Hanover ,NH
Data Point	(501)442-8777	Online Publications - Excellent TBBS System	Gary Funk	Fayetteville ,AR
DataLink RBBS System	(214)394-7438	Weather Satellite Imaging, NOAA Satellite Tracking-AMSAT-NA	Dallas Remote Imaging Group/Jeff Wallach	Carrollton ,TX

Dean's Office	(201)279-7048	Business and Education System - Small, but excellent	Dean Frank Relotto	Clifton ,NJ
Depeche BBS	(702)674-2816	Online Text - Closing Stocks - USA Today - Sports Stats	Jerry Walters	Sparks ,NV
Dr. Dobbs Listing Service	(603)882-1599	Source Code from Dr. Dobb's Journal, MIPS, and DBMS Mags.	M&T Publishing/Computer Metrics	Redwood City ,CA
East Bay X-Change 372/888	(803)556-7485	Home of XRS Offline Mail Reader	Mike Ratledge	McClellanville ,SC
Economic Bulletin Board	(202)377-3870	Economic Statistics/GNP/CPI/Employment, Trade Opportunities	US Department of Commerce	Springfield ,VA
Eestl BBS #1	7 0142 422583	First BBS in USSR - Estonian Business Issues	Lembit Pirn/Estonian Business Assoc.	Tallinn ,Estonia
Electic Dialectic BBS	(708)705-6774	40 Online Game Doors - Graphic Files	Bruce Johnson	Palatine ,IL
Energy Info Admin E-Publications	(202)586-8658	Variety of Petroleum/Coal/Electricity Energy Statistics	US Department of Energy	Washington ,D.C.
EXEC-PC	(414)789-4210	Largest BBS in US - 90 Lines - 70,000 files - 4 Gigabytes	Bob Mahoney	Shorewood ,WI
Executive Network	(914)667-4567	Interlink Netmail National Host - Multiline PCBoard System	Andy Keeves	Mt. Vernon ,NY
Farwest BBS	(604)381-3934	Large Western Canada Galacticomm Info System	Ren L'Ecuyer	Victoria ,BC
FCC Public Access Link	(301)725-1072	Equipment Authorization Status Advisory Service	Federal Communications Commission	Columbia ,MD
Federal Job Information Center	(313)226-4423	Federal Job Opportunity Lists available online	US Office of Personnel Management	Detroit ,MI
FEDLINK ALIX II	(202)707-9656	Info on Federal Libraries -Excerpts Library of Congress News	Federal Library Information Network	Washington ,D.C.
Fido Software BBS 1:125/111	(415)863-2739	The First Fido BBS and home of Fido BBS 12s	Tom Jennings	San Francisco ,CA
Fido Tech Stand	31-30-719994	Fidonet Technical Information for Holland	J.J. van der Maas	Utrecht ,Holland
File Cabinet BBS	(215)678-9854	10-line PCBoard System. 959 MB-100 Conferences-80,000 files	Dan Bair	Wyomissing ,PA
FOG City BBS 125/10	(415)863-9697	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	Bill Essex	San Francisco ,CA
Forbin Project, The	(319)233-6157	Home of QModem SST Communications Software	John Friel III	Cedar Falls ,IA
Fred the Computer	(508)872-8461	Newspaper BBS. Wierdnet Newswire. List of MA Libraries	Middlesex News	Framingham ,MA
GAO Bulletin Board	(202)275-1050	Lotus/dBase/Word Perfect User Tips	US General Accounting Office/Sheryl Lee	Washington ,D.C.
GLIB	(703)578-4542	Gay and Lesbian Information Bureau - 11 Lines - 9600 bps	Community Educational Svcs. Foundation	Arlington ,VA
Greenpeace Environet	(415)861-6503	Ecological and Peace Issues - Disarmament/Toxics/Wildlife	Dick Dillman/Greenpeace	,
GT PowerComm BBS	(713)772-2090	Home of GT Power Communications Software	Paul Meiners/P&M Software	Houston ,TX
Hay Locator	(317)494-6643	Database of Hay/Straw Suppliers and Buyers	Purdue Univ. Agricultural Computer Net	,.
Hayes Advanced Systems Support	(800)874-2937	Customer Support Line for Hayes Customers. V-series/Ultra	Hayes Microcomputer Products	Norcross ,GA
Herpnet/Satronics TBBS	(215)698-1905	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Mark Miller	Philadelphia ,PA
HH Info-Net BBS	(203)246-3747	MS Windows and OS/2 Files our specialty	Lee Winsor	New Hartford ,CT
HOLLIS	(617)495-9500	Harvard On-Line Library Information System - 7E1 VT100	Harvard University	Cambridge ,MA
IBM Users Group Support BBS	(404)988-2790	IBM PC User Groups Database - Newsletter Exchange	IBM National Support Center	Atlanta ,GA
Illuminati	(512)447-4449	GURPS Cyberpunk - Seized by SS during Operation Sun Devil	Steve Jackson Games	Austin ,TX
Imaging GraphicsLine BBS	(415)968-1834	Paradise/Verticom Graphics Products - .GIFs	Western Digital/Nan Coley	Milpitas ,CA
Inbound/Outbound/Teleconnect	(212)989-4675	Telephone Sales Trade Magazine Online Service	Harry Newton Publications	New York ,NY
Index Systems	(404)951-1540	Excellent list of Atlanta BBS systems online	Rodney Aloia	Marietta ,GA
Infinity World	(606)271-6556	8 line Galacticomm System - Many good text publications	Daniel Diachun	Lexington ,KY
Intel Support BBS	(503)645-6275	Support for Intel PC Products - Inboard 386/AboveBoard 286	Intel Corporation PCEO Division	Hillsborough ,OR
Invention Factory	(212)431-1194	27 Lines - 100 Directories - Good Shareware Catalog	Mike Sussell	New York ,NY
Investor's Online Data	(206)285-5359	Online Investment/Stock Market Information/Tech Analysis	Don Shepherdson	Bellevue ,WA
JAG-NET	(202)325-0748	Navy Judge Advocate General's Information Network	US. Dept. of Navy / Chris Buechler	Arlington ,VA
JDR Microdevices BBS	(408)559-0253	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	JDR Microdevices	San Jose ,CA
JOBBS	(404)992-8937	Online Job Listings - 2186 Technical Pos. - 10,000 Corps.	Alpha Systems Inc./Bill Griffin	Roswell ,GA
KIMBERELY BBS	(612)340-2489	Prime Rate-Fed Funds-T-Bill-Discount Rate-Economic Data	Federal Reserve Bank of Minneapolis	Minneapolis ,MN
LANtastic BBS	(602)293-8065	Support for LANtastic local area network	Artisoft Inc.	Tucson ,AZ
Late Night Software 125/555	(415)695-0759	Home of UFGATE - Software to connect PCs to UUCP/Usenet	Tim Pozar	San Francisco ,CA
Leading Edge Auto Info Line	(508)836-3967	Support for Leading Edge Computer Owners	Leading Edge Computer	Westborough ,MA
LegalEase	(509)326-3238	Legal Issues/Forms - Law BBS List	Bill Sorcinelli	Spokane ,WA
LUMINA	(612)626-2206	Libraries of Univ.of Minnesota Integrated Net Access7E1VT100	University of Minnesota	Twin Cities ,MN
Maxi-Micro TickerScreen	(212)809-1160	2000 Closing Stock Quotes/Market Research/Order Entry	Max Ule & Company	New York ,NY
McAfee Associates BBS	(408)988-4004	Computer Virus Information - VIRUSCAN and CLEANUP Programs	John McAfee/CVIA	Santa Clara ,CA
Micro Foundry, The	(415)598-0498	520 MB Downloads - Growing to Become the Best - Boardwatch	Thomas Nelson/Clockwork Software	San Jose ,CA
Micro Message Service	(919)779-6674	USA Today/Boxoffice Magazine - Large Download Area	Mike Stroud	Raleigh ,NC

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - OCTOBER 1990

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
Microlink B	(303)972-9600	1 Gigabyte of IBM Software - Multiline - USA Today News	Girard Westerberg	Littleton ,CO
Microrim Technical Support BBS	(206)881-8119	Support for Popular R:Base Relational Data Base System	Microrim Corporation	Redmond ,WA
Microsoft Product Support BBS	(206)646-9145	Word/Works/Multiplan/Flight Simulator Application Notes	Microsoft Corp/Scott J. Honaker	Bellevue ,WA
Minnesota Spacenet	(612)920-5566	Minnesota Space Frontier Society - NASA News	Ben Husset	Minneapolis ,MN
Monu-CAD BBS	(607)264-3307	CAD Designs for Tombstones, Monuments, and Memorials	Jim Faliveno/Monumental Computer App.	Cherry Valley ,NY
MusicNet	(301)946-6796	CD Catalog, Music News, Music Files, Top 40 Listings	Mike James - Multimedia Software	Mount Airy ,MD
NARDAC BBS	(804)445-1627	Zenith Computer Support - List of Federal Micro User Groups	Navy Regional Data Automation Center	NAS Norfolk ,VA
NASA Headquarters Info Tech	(202)453-9008	Shareware and Technical Info for NASA PC users.	National Aeronautical and Space Admin.	Washington ,DC
NASA Spacelink	(205)895-0028	NASA Educational Affairs Div. - Flight Data/Space History	Marshall Space Flight Center	Huntsville ,AL
Nashville Exchange	(615)383-0727	8 line TBBS - Games/TDBS Software Development	Ben Cunningham	Nashville ,TN
National Agricultural Library	(301)344-8510	Agricultural Info/Research Resources	US Department of Agriculture	Beltsville ,MD
National Genealogical BBS	(703)528-2612	Family History - Genealogical Research - Gravestone Haunting	National Genealogical Society	Arlington ,VA
National Inst.Science Technology	(301)948-5717	Micro Elect.Info Exchange - Virus Protection/Security Issues	National Inst. of Science and Technology	Gaithersburg ,MD
National Publishers Exchange	(813)989-1087	Headquarters for NPE Newsletter - Desktop Publishing	Ed Aborn	Tampa ,FL
Nautilus BBS	(316)365-7631	32 Line TBBS with 5 GB of Files on 80486. CD/WORMS	Nautilus Communications	Iola ,KS
NAVWESA	(202)433-6639	Naval Weapons Engineering Support	Dept. of Navy / Bill Walsh	Washinton, D.C. ,.
Network World Bulletin Board	(508)620-1178	LAN and WAN Issues and Technology	Network World Magazine/CW Communications	Framingham ,MA
Neuropsychology Bound 157/3	(216)356-1431	Support Groups for Disabled/Physically Impaired	Butch Walker	Rocky River ,OH
NIST ACTS	(303)494-4775	Automated Computer Telephone Service - Sync PC to NBS Time	Nat. Institute for Standards/Technology	Boulder ,CO
NOAA Space Environment Lab	(303)497-5042	Solar Flare/Geomagnetic Data Online	National Oceanographic/Atmospheric Admin	Boulder ,CO
Numisnet	(301)498-8205	Collecting of Coins, Medals, and Exonumia	The Mitchell Group	Laurel ,MD
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	US Department of Education	Washington ,D.C.
Old Colorado City Communications	(719)632-4111	Political Discussions - Unix UUCP Public Access - Multiline	Dave Hughes	Colorado Springs ,CO
Online Computer Bookstore	(408)744-0514	Online Database/Orders for Computer Book Titles	Austin Murphey & Associates Book Store	Sunnyvale ,CA
Online Now	(807)345-5522	5 CD-ROMS plus 3MB New Software per Week	Gary Walsh/Tom Haavisto	Thunder Bay ,Ontario
Online Sports	(716)688-6537	Large base of Sports Stats for Pro Gamblers	Terry McCraith	Williamsville ,NY
Online With Hayes	(404)446-6335	Hayes Public Bulletin Board - Conferences/SIGS/Support	Hayes Microcomputer Products	Norcross ,GA
Oracle PC	6108 260-6222	South Australian TBBS Multiline System	Don Crago	Pooraka South Australia
Osprey's Nest	(301)989-9036	Birdwatching, Bird feeding, Naturalist/Ecology Issues	Fran and Norm Saunders	Colesville ,MD
PacComm BBS	(813)874-3078	Packet Radio Equipment Supplier - TNC/PSK Modems	Gwyn Reedy/PacCom Inc.	Tampa ,FL
PC Ohio	(216)381-3320	Shareware library with 100% USR HST access - 5 years up	Norm Henke	Cleveland ,OH
PC Pursuit Information	(800)835-3001	Unlimited LD Calls to 34 US Cities - $25 Flat Monthly Rate	Telenet Communications	Reston ,VA
PC-Link Central	(812)855-7252	University PCBoard System. Home of A86/D86 Assembly Lang.	Indianna University/Eric Isaacson	Bloomington ,IN
PDSLO BBS	(516)938-6722	Home of THELIST - Listing of 3000 Nationwide BBS Systems	Jim Toro	Hicksville ,NY
PHYSICS Forum BBS	(413)545-1959	Physics and Astronomical Sciences	Univ.of Mass. Dept. of Physics/Astronomy	Amherst ,MA
Pinecliffe BBS 104/28	(303)642-7463	Large Shareware Library/Echomail Conferences since 1985	Craig Baker	Pinecliffe ,CO
PKWare BBS	(414)352-7176	Home of PKZIP 1.10 Compression Utility	Phil Katz/PKWare Incorporated	Glendale ,WI
Pleasure Dome	(804)490-5878	Sexually Explicit Fantasy Chat System - Adults only	Tom Terrific	Tidewater ,VA
Popular Mechanics Online BBS	(212)582-8369	Automotive, Home/Shop, Electronics/Photography, Science	Popular Mechanics Magazine	New York ,NY
ProComm Support BBS	(314)474-8477	Home of ProComm 2.4.3 and ProComm Plus Comm Prgrms	Thomas Smith/DataStorm Technologies Inc.	Columbia ,MO
Public Brand Software BBS	(317)856-2087	Commercial Shareware Vendor	Public Brand Software	Indianapolis ,IN
Radio Electronics BBS	(516)293-2283	Radio Electronics Magazine Online Adjunct	Gernsback Publications	Farmingdale ,NY
Random Access Information Svc.	(503)761-8100	10500 IBM/MAC/AMIGA Files - 3000 MaxiPic Graphics	Janice Stevens	Portland ,OR
RGB Computing	(519)824-3997	Multiline Information Service/PC Sales/Large File Selection.	Ronald Spencer - RGB Computing	Guelph ,Ontario

Rose Media	(416)733-2780	Excellent Canadian PC Board System-Publications/Conferences
Rusty & Edies	(216)726-0737	Large ML PCBoard run by Husband and Wife - NFL/Tradewars
Salt Air BBS	(801)261-8976	Home of PCBoard BBS Software - National List of PCB Sys
Science Resource Studies BBS	(202)634-1764	Federal R&D Budget - Technical Labor Market Statistics
Scooters Scientific Exchange	(215)657-5586	Biotechnology/Chemistry/Physics/Astronomy/Space Sciences
SEAboard!	(201)473-1991	Support system for ARC, SEADOG, and AXE software.
Seagate Technical Support BBS	(408)438-8771	Installation and Specifications for Hard Drive Models
Sistema Profesional Informacion	525 590-5988	Largest BBS in Mexico - Spanish Language TBBS
Society for Technical Comm. BBS	(703)522-3299	STC Job Service, Freelance Registry - Technical Writers
Sonshine Express BBS	(408)946-7362	Family Oriented Christian BBS
Sound Advice BBS	(816)436-4516	Twenty Line PCBoard with 2 Gigabytes Storage - HST Modems
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Taxonomic Reference File	(215)972-6759	Online Bacterial Name Database - ORACLE Door
TBBS Net 104/23	(303)699-9248	Home of The Bread Board System (TBBS) BBS Software
Telegodzilla	(503)621-3746	Home of ZModem File Transfer Protocol/YModem/YAM
Telix Support BBS	(416)439-8293	Support Service for Telix Communications Software
Texas State Law Library BBS	(512)463-1371	Online Legal Periodicals and Citation Database
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The Ledge PCBoard	(818)352-3620	Home of Textview Door for PCBoard Systems
The LiveWire BBS	(609)866-2551	Online Magazine Subscription Orders/BBS Callers Digest
The Other BBS 1:1/0	(717)657-2223	Fidonet Zone Coordinator for North America 1:1/0
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Zenith Technical Support BBS	(800)888-3058	Technical Support for Zenith Desktop and Laptop Units

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